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VETERINARY BULLETIN

Vol. 22.] August, 1952 [No. 8

DISEASES CAUSED BY BACTERIA AND FUNGI

SCHALM, O. W. & ORMSBEE, R. W. (1949). **Effects of management and therapy on staphylococcic mammary infections.** — *J. Amer. vet. med. Ass.* **115,** 464-473. 2331

Control of staphylococcal infection was undertaken in a large dairy herd over a period of four years, consisting partly in hygienic methods of milking combined with segregation of infected from non-infected animals, and partly in treatment of the infected udders. The authors have described the use of streptomycin in chapter 44 of a book which has already been reviewed [*V.B.* **21,** 518], of sulphamethazine [*V.B.* **20,** 1185] and of benzoquinone [*V.B.* **19,** 1723]. In this paper they described results with penicillin.

Unlike infections with *Str. agalactiae* or *Bact. coli, Staphylococcus pyogenes* infection rarely caused violent inflammatory reactions in the udder; only 14% of the infected samples showed an increase in leucocyte count.

Using these measures, the staphylococcal infection rate was reduced from 50 to 20%. During lactation the results with penicillin therapy were particularly unsatisfactory. Some of the strains that had withstood penicillin therapy were fully sensitive *in vitro,* so that factors other than drug resistance must be held responsible for the failure of treatment.

—A. MAYR-HARTING.

GORRILL, R. H. (1951). **Experimental staphylococcal infections in mice.**—*Brit. J. exp. Path.* **32,** 151-155. 2332

Mice were found to be resistant to intravenous injection of coagulase-negative strains of staphylococci, but not to coagulase-positive strains, which produced multiple abscesses in the kidneys.—CLIVE BRIGGS.

ROGERS, D. E. & TOMPSETT, R. (1952). **The survival of staphylococci within human leukocytes.**—*J. exp. Med.* **95,** 209-230. [Authors' summary copied *verbatim.*] 2333

In a study of the phagocytosis of staphylococci by human leukocytes it has been observed that strains of staphylococci producing human infection were phagocytozed by human polymorphonuclear leukocytes *in vitro* under conditions in which virulent pneumococci, streptococci, or *Klebsiella* were rarely engulfed.

In the presence of human leukocytes in plasma there was a rapid fall in the numbers of viable staphylococci of both pathogenic and non-pathogenic strains, the beginning of which was detectable in 10 to 15 minutes. The fall in culturable pathogenic microorganisms was considerably less marked, however, and a rapid resurgence of growth occurred in 4 to 8 hours, whereas the number of culturable non-pathogenic microorganisms remained low for 18 to 24 hours.

These differences appear to be explained by the observation that a significant number of microorganisms of pathogenic strains were able to survive within human leukocytes. Such intracellular survival was found to be associated with evidence of destruction of the leukocytes. In contrast, non-pathogenic strains of staphylococci failed to survive within human polymorphonuclear leukocytes following ingestion.

FEW, A. V., COOPER, P. D. & ROWLEY, D. (1952). **Reaction of penicillin with the staphylococcal cell wall.** [Correspondence.] —*Nature, Lond.* **169,** 283-284. 2334

Sensitive staphylococci possess penicillin-binding power localized in the cell-wall fraction when the organisms are mechanically degraded and centrifuged.—N. DEAN.

LOIZELIER, A. B. (1950). Aislamiento de la "Klebsiella genitalium" en procesos septicemicos. [**Pneumococcal septicaemia in**

NOTE.—*The* V.B. *references given in square brackets now refer to abstract numbers and not to page numbers.*

horses.]—*Trab. Inst. Biol. anim. Madr.* **9,** pp. 299-308. 2335

L. reported the isolation of bacteria, resembling *"Klebsiella genitalium"*, and serologically related to the Type II pneumococcus, from the viscera of horses with septicaemia.

—I. W. JENNINGS.

WEIR, J. (1948). **Observations on chronic mastitis.**—*Vet. Rec.* **60,** 93-94. 2336

W. discussed chronic mastitis in dairy herds and stressed his view that the primary cause is injury to the teat and that infection with *Str. agalactiae* is secondary. Roughly managed stripping or improper use of milking machines are particularly harmful. The gradual establishment of herds trained to let down their milk quickly without stripping was advocated.

—J. SCARNELL.

TAYLOR, J. I. (1949). **Some aspects of the epidemiology of bovine mastitis.**—*Vet. Rec.* **61,** 455-456. 2337

Doses of 100,000 units of penicillin per quarter administered to all cows of the herd on five successive days cleared five out of ten herds and reduced the incidence in the rest. *Str. agalactiae* was found to be easily eradicable from 50% of herds and from 20% without serious trouble, but the other 30% were resistant. A similar scheme with doses of 50,000 units on four successive days gave comparable results in that five out of ten herds were clear after six weeks, but only three remained free when tested three and six months later.

—MALCOLM WOODBINE.

GRAY, E. A. (1952). **The ecology of mastitis. A study of a group of Northumberland farms.** —*Brit. vet. J.* **108,** 15-31. [Author's summary modified.] 2338

A survey of incidence of the organisms of mastitis was carried out during 1943 and 1944 on a group of 11 Northumberland farms lying in or above the confluence of the rivers East and West Allen. *Str. agalactiae* was found on only five of the farms, but the number of cows affected was higher than that affected by other organisms. *Str. agalactiae* infection was common only in those farms with the highest average total output of milk for their particular group, hill or valley farms. *Str. agalactiae* infection was present on four farms, and absent from one farm, using milking machines. Outbreaks of mastitis on three farms in the summer were confined to organisms already detected as causes of mastitis on the farms concerned. The dipterous fly *Hydrotea irritans* was found to accompany cows on all three of these farms. Evidence was given that the insects might act as mechanical vectors.

Details of the geological formation of the valleys, the soil features and the grasses were given.

MURNANE, D. (1952). **Some observations on the control of mastitis of dairy cows in Australia.** —*Rep. XIVth Int. vet. Congr.* **2,** 127-135. [French and German summaries. Author's summary slightly modified.] 2339

It was not found possible to eliminate completely *Str. agalactiae* infections of the udder from a closed milking herd by promptly treating with penicillin all quarters in which infection was detected bacteriologically at monthly intervals over a period of 10 months. Neither was it possible to eliminate infection from either of two closed herds by simultaneous treatments with penicillin of all quarters of all cows (lactating and dry) on the properties. Possible reasons for this are:— (a) re-infection from external sources, (b) inability to detect all extremely low-count infections at any one examination by the routine laboratory methods used.

Although infection was not eliminated by the above procedures no case of clinical mastitis occurred during the 12-month period.

Evidence of the controlling influence of good milking shed hygiene on the spread of mastitis was submitted.

BUXTON, J. C. (1952). **Disease in poultry associated with** *Streptococcus zooepidemicus.*— *Vet. Rec.* **64,** 221-223. [Author's summary copied *verbatim.*] 2340

An account is given of what is believed to be the first outbreak to be reported in the British Isles of acute infection in poultry with *Str. zooepidemicus*. The disease ran an acute course for about four weeks in a large poultry flock before passing to a chronic phase. Total losses in the flock amounted to about 120 birds out of a total stock of 250. In the early stage of the disease birds were found dead for no accountable reason, but later there were symptoms of diarrhoea and nasal catarrh. Chronic disease ensued after the fourth week.

Post-mortem examination showed, for the most part, well-marked congestive lesions in livers and spleens with tracheitis and infection of the air sacs as a consistent feature; *Str. zooepidemicus* was recovered in great numbers from nearly every lesion.

Experimental inoculations failed to demonstrate a route of infection, although it is thought probable that the organisms gained entry by means of the respiratory tract and that carrier

birds acted as a source of primary contamination.

HACKENTHAL, H. & BIERKOWSKI, E. (1951). Streptococcenstudien I. **[Studies on streptococci. I.]**—*Zbl. Bakt. I. (Orig.)* **156,** 465-483. [English, French and Russian summaries.] 2341

The authors reviewed briefly the limitations of morphology, cultivation in fluid media, colony form and virulence tests and described a set of six blood agar plates to which various indicator substances were added and which they claimed were of value for the differentiation of streptococci. The plates used contained China blue and peptone with the addition respectively of glucose, lactose, mannitol, sorbitol, inulin plus benzidine (0·025%) and inulin plus benzidine (0·0025%). The growth characters of eight types of streptococci on each kind of blood agar plate, of enterococci, *Str. lactis* (Types I and II), *Str. salivarius,* haemolytic streptococci, pneumococci (Types I and II) and *Str. viridans* are illustrated in colour.—E. G. WHITE.

SEELEMANN, M. & CARSTENS, O. (1950). Weitere Untersuchungen über die Biologie und Serologie der Streptokokken (Gruppen A, B, C.) **[Biology and serology of streptococci of Groups A, B and C.]**—*Z. Hyg. Infektkr.* **131,** 56-64. 2342

Strains were observed that belonged serologically to the Lancefield groups A, B and C, but were not β-haemolytic and were atypical in their fermentation reactions. All these strains were isolated as pathogens from animals and one of the group A strains from a Douglas abscess in a woman.—A. MAYR-HARTING.

MOORE, G. R. (1950). **Clinical aspects of Vibrio foetus infection in cattle.**—*J. Amer. vet. med. Ass.* **116,** 190-192. 2343

A brief note on clinical aspects of *Vibrio fetus* infection in cattle.—L. M. JONES.

WEBSTER, H. D. & THORP, F., JR. (1950). **Vibrionic abortion, a venereal disease of cattle?**—*M.S.C. Vet.* **11,** No. 1. pp. 23-25 & 47. 2344

A general note. No new material.

SCHMID, G. (1949). Mitteilung über die Vibrionen-Dysenterie des Schweines. **[Vibrionic dysentery in pigs.]**—*Schweiz. Z. Path. Bakt.* **12,** 504-506. 2345

Vibrionic dysentery occurs in pigs in three forms—acute, characterized by rusty red diarrhoea and a rapid course clinically resembling swine fever; subacute in piglets, accompanied by an obstinate yellow diarrhoea; and chronic, in which young pigs do not thrive.

The characteristic P.M. finding is oedematous enteritis with swelling of the regional lymph nodes. Vibrios can be isolated from the intestinal wall by a technique which S. described. On blood agar plates the causal organisms grow in two distinct forms, moist or dry. S. has diagnosed bacteriologically 150 cases of this disease at Berne.—J. EDWARDS.

FRETER, R. (1951). Serologische Untersuchungen an Vibrionen und ihren Fermenten. **[Serology of *Vibrio* and vibrionic enzymes.]** —*Zbl. Bakt. I. (Orig.)* **156,** 523-536. 2346

F. studied 64 strains of vibrios isolated from water in the Frankfurt and Hamburg areas, 20 strains from India which were isolated from the faeces of healthy human beings and 12 strains of pathogenic *V. cholerae.* All strains which fermented glucose produced haemolysis of g. pig erythrocytes which could be inhibited by vibrio antiserum. With strains which liquefied gelatin there was inhibition of their proteolytic action when vibrio antiserum was present. Vibrio antiserum did not inhibit haemolysis or liquefaction of gelatin produced by strains of *Proteus vulgaris, Bact. coli* or *B. subtilis.* Against sheep erythrocytes each vibrio produced haemolysins of similar specificity.

—E. G. WHITE.

TOMCSIK, J. (1949). Zur Frage der induzierten Mutation der Milzbrandbazillen. **[Induced mutation in *Bacillus anthracis.*]**—*Schweiz. Z. Path. Bakt.* **12,** 489-499. 2347

A detailed description of two mutants of *B. anthracis* and their cultural and immunological behaviour in comparison with a normal strain.—J. EDWARDS.

MCCLOY, E. W. (1951). **Studies on a lysogenic *Bacillus* strain. I. A bacteriophage specific for *Bacillus anthracis.***—*J. Hyg., Camb.* **49,** 114-125. 2348

The author described a bacteriophage which attacked almost exclusively *B. anthracis,* including its atypical variants. The organisms were attacked only when in the unencapsulated state.

—CLIVE BRIGGS.

TORRES MUÑOZ, L. E. (1950). Inmunización de la fiebre carbonosa por medio de vacuna avirulenta derivada de cepas virulentas. **[A living attenuated anthrax vaccine.]**—*Rev. grancolomb. Zootec. Hig. Med. vet.* **4,** 5-28. 2349

T. recommended an attenuated vaccine, obtained from highly virulent strains of *B. anthracis* on Sutton's solid medium in an atmosphere containing 65% CO_2. This gave

about 75% protection in g. pigs and 100% protection in goats.

An aluminium hydroxide adsorbed anthrax vaccine, on the other hand, gave only minimal protection in g. pigs, and none at all in goats.

—G. P. MARSHALL.

WEIR, J. & BARBOUR, D. (1950). **Tuberculosis of the udder and its differential diagnosis.**—*Vet. Rec.* **62**, 239-243. **2350**

A clinical account of the difficulties of diagnosis of mammary TB. in dairy cattle.

—K. G. TOWERS.

CALLENDER, E. R. (1951). **The eradication of bovine tuberculosis.**—*J. R. sanit. Inst.* **71**, 386-391. Discussion pp. 391-396. **2351**

Progress made in the operation of the Attested Herds Scheme was outlined. Details were given of the Area Eradication Plan and about the efficacy of the tuberculin test.

—G. V. LAUGIER.

MEYN, A. (1952). Die Rindertuberkulose als Quelle menschlicher Tuberkuloseformen. **[TB. in cattle as a source of human infection.]**—*Mh. prakt. Tierheilk.* (*Die Rindertuberk.*) **4**, 40-48. **2352**

M. discussed the literature on the potential pathogenicity of bovine type tubercle bacilli for man and on the relative incidence of such infections, as well as the sources and routes of infection.—G. P. MARSHALL.

PSCHORR. (1951). Probleme und Problematik der Tuberkulosebekämpfung. **[Control of TB.]**—*Mh. prakt. Tierheilk.* **3**, 302-313. **2353**

P. considers that it is possible that bovine type tubercle bacilli may change into the human type during prolonged passage in man. Control of TB. is a problem of general hygiene affecting man and cattle. Meteorological influences may activate TB.—W. R. BETT.

LUKE, D. (1951). **Studies in tuberculous sensitivity in the pig. II.—Fluctuations in hypersensitivity.**—*Vet. Rec.* **63**, 515-518. [For previous part, see *V.B.* **21**, 2824.] **2354**

In a pig with chronic progressive TB. caused by sensitization with the bovine type tubercle bacilli the intradermal test with Weybridge retest tuberculin diluted 1:1,000 gave a steady reaction for the first nine months, then a fall over the next three months. The pig died 372 days after inoculation and P.M. examination revealed advanced general TB. Five other pigs also sensitized to the bovine type organism had varying sensitivity. Two animals which developed widespread lesions without clinical symptoms showed little change in sensitivity, while three pigs inoculated intraperitoneally developed only slight lesions or none and the tuberculin reaction before slaughter at 190 days was depressed. Ten pigs infected with the avian type bacillus by intraperitoneal inoculation of 10 mg. of live organisms had a progressive fall in the reaction to diluted tuberculin and no correlation between the extent of the reaction and the severity of the lesions found P.M. Evidence was obtained to suggest that complete loss of sensitivity did not occur until some time after the organisms had died. The typical "cross over" between lymphocytes and neutrophile leucocytes in the circulating blood was a feature of the tuberculin test in highly sensitized animals. With waning sensitivity the change was insufficient to cause a "cross over" but was still detectable.—E. G. WHITE.

RATCLIFFE, H. L. (1952). **Tuberculosis induced by droplet nuclei infection. Pulmonary tuberculosis of predetermined initial intensity in mammals.**—*Amer. J. Hyg.* **55**, 36-48. **2355**

The purpose of this study was to devise a standard procedure for the induction of pulmonary TB. of minimal intensity in laboratory animals, suitable for studying the relation of nutrition to resistance. Mice, rats, g. pigs, and hamsters, made to inhale virulent bovine or human type tubercle bacilli as single cells in aerosol suspensions of five droplet nuclei, differed from rabbits only in developing more tubercles in their lungs than could be accounted for, if their ventilation rates were calculated for resting animals. When values for respiratory volumes were increased to compensate for activity during infection, the number of initial tubercles developing to macroscopic size in the lungs approximated the number of bacilli estimated to have been inhaled. Under the conditions of these experiments the initial response of mice, rats, hamsters, g. pigs, and rabbits to inhaled infection by human or bovine type tubercle bacilli is predictable, and the initial intensity of inhaled TB. can be predetermined.

—W. R. BETT.

RAC, R. (1951). **Avian tuberculosis in an Australian brown hawk (*Falco berigora*).**—*Aust. vet. J.* **27**, 209. **2356**

An organism recovered from a dead hawk was shown to be avian type *M. tuberculosis*.

—D. C. BLOOD.

DARZINO, E. (1952). **The epizootic of tuberculosis among the gias in Bahia.**—*Acta tuberc. scand.* **26**, 170-174. [In English. Abst. from author's summary.] **2357**

Strains of tubercle bacilli isolated from

persons in D.'s laboratory were atypical. They were non-pathogenic for g. pigs, fowls and mice. It was found that gias (edible frogs, *Leptodactylus pentadactylus*) in Bahia, Brazil, were all naturally infected with similar organisms. These frogs are eaten extensively by the local people. It was found that emaciated gias were commonly present and that such animals were heavily infected with the organism, with lesions in the lungs, liver and other viscera and in the legs and joints.

Apparently healthy, vigorous gias were also found to be infected. Of 60 gias from Bahia examined all were infected. D. referred to the organisms as tubercle bacilli.

SPANEDDA, A. (1951). Ricerche sui mycobatteri. IV. Azione dei liquami luridi sulla vitalità del mycobatterio TBC umano [**Viability of** *M. tuberculosis*.]—*G. Batt. Immun.* **43**, 404-407. [English, French and German summaries.] **2358**

Human type *M. tuberculosis* failed to grow *in vitro* or to infect g. pigs after more than eight days' contact with the effluent from the infectious wing of a hospital or (to a lesser degree) with "artificial sewage" prepared from the excreta of non-tuberculous patients.

—G. P. MARSHALL.

CORPER, H. J. (1952). **The growth of tubercle bacilli at sub-optimum temperatures.**—*Acta tuberc. scand.* **26**, 96-105. [In English. Abst. from author's summary.] **2359**

On good nutrient media, mammalian type tubercle bacilli are capable of growing at various incubation temperatures—from an optimum of about 37°C. to an upper limit of about 42°C. and a lower limit of about 27°C. Growth of tubercle bacilli occurs relatively rapidly in the upper ranges of temperatures of incubation; it may require as long as one year to become visible at such a temperature as 27°C. Avian type tubercle bacilli have a much wider temperature range for growth on a good nutrient medium than the mammalian type. At 27°C. egg-yolk medium yielded a greater, more prolific and earlier growth of mammalian type organisms than the commonly used egg media, but this was not the case at 37°C.

TAVONI, V. (1950). Sulla differenziazione biologica, a scopo diagnostico, dei bacilli tubercolari di tipo umano, bovino ed aviare a mezzo inoculazione intrapleurale nel coniglio. [**Differentiation of human, bovine and avian types of tubercle bacilli by intrapleural inoculation of rabbits.**—*Riv. Med. Vet. Zootec.* **2**, 133-162. [English and French summaries.] **2360**

T. carried out animal experiments which allowed him to obtain a satisfactory degree of differentiation between the bovine, human and avian types of *M. tuberculosis*; 26 rabbits were inoculated intrapleurally, in groups of four, with 0·01 mg. of a culture on Petragnani medium of two strains each of the three types.

While intrapleural inoculation does not always produce sufficiently extensive lesions in rabbits to make decisive differentiation possible, the results, as determined in animals which either died within 61 days or were killed on the 62nd–64th days after inoculation, gave rise to the following conclusions:—If, under these conditions, the lesions were extensive but confined to the site of inoculation, the bacillus was almost certainly of the human type. With more extensive lesions, involving all sections of the pleura, the lung and pericardium, and also the pleura of the opposite side, the bovine type was involved. With the avian type the lesion was characterized by an occasional tubercle at the site of inoculation, by haemorrhagic lung infarcts (only in animals which died before the 60th day) and by slight signs of degeneration of the parenchyma of the liver.—G. P. MARSHALL.

ROTACH, F. (1947). La classification sérologique des bacilles de la tuberculose aviaire. [**Serological classification of avian type tubercle bacilli.**]—*Schweiz. Z. Path. Bakt.* **10**, 335-348. [In French. English, German and Italian summaries. Abst. from English summary.] **2361**

Avian type tubercle bacilli can be separated serologically into three varieties. Besides the type specific antigen there is an antigen common to a large group of acid-fast bacilli. A third antigen, which is lacking in mammalian strains, is common to all avian strains; it is, however, not specific for avian type tubercle bacilli. There is no correlation between antigenic structure, pathogenicity, and virulence of avian strains.

BLOCH, H. (1950). **Studies on the virulence of tubercle bacilli. The relationship of the physiological state of the organisms to their pathogenicity.**—*J. exp. Med.* **92**, 507-526. [Author's summary copied *verbatim*.] **2362**

On the basis of earlier observations dealing with the relation of a petroleum ether-soluble material (cord factor) [from cord-forming organisms—Ed. *V.B.*] obtained from young cultures of virulent tubercle bacilli to the pathogenicity of these organisms, it was expected that young cultures yielding more cord factor than older ones of the same strain would also be

more virulent for susceptible animals. By infecting mice with equal numbers of bacteria from 3 day and 3 week old cultures, significant differences in the character of disease produced were observed. The mice infected with the younger cultures died of a rapid, septicemic infection with tuberculous lesions in many organs including the heart. A tuberculous myocarditis was probably the immediate cause of death. Mice infected with the older bacteria died of a chronic disease corresponding to the well known mouse tuberculosis. In these cases, the heart was completely free of lesions. No histologic tissue reactions typical of tuberculosis were seen in the animals dying from the acute type of the disease. A similar rapidly progressing infection was observed in rabbits infected with bacteria from young cultures. The symptoms corresponded to the ones seen in the disease known as the Yersin type of tuberculosis. It seems that the pathology of this latter can be produced with every type of pathogenic mycobacteria, human as well as bovine and avian, provided the cultures used are young. Thus it may be inferred that the acute type of tuberculosis is more frequent than commonly accepted both in experimental infection and in the naturally occurring disease. It is proposed to explain the mechanism of this acute infection within the framework of the cord factor hypothesis.

EBERT, R. H. (1952). *In vivo* **observations on the effect of cortisone on experimental tuberculosis, using the rabbit ear chamber technique.** — *Amer. Rev. tuberc.* **65,** 64-74. [French and Spanish summaries. Abst. from author's summary.] **2363**

Using the rabbit ear chamber technique, an *in vivo* study was made of the effects of cortisone on TB. It produced a quantitative reduction in the inflammatory response of the animal hypersensitive to TB. Three consistent changes were observed which were common to other types of inflammation studied. Vascular tone was better maintained; there was a reduction in damage to arteriolar and venule endothelium; as a result of the increased integrity of vascular endothelium, there was a decrease in diapedesis of leucocytes and a reduction in exudate.

Although cortisone delayed tissue destruction, the reduction in inflammation limited the localization of the infection.

MICHAEL, M., JR., CUMMINGS, M. M. & BLOOM, W. L. (1950). **Course of experimental tuberculosis in the albino rat as influenced by cortisone.**—*Proc. Soc. exp. Biol., N.Y.* **75,** 613-616. [Authors' summary copied *verbatim.*] **2364**

Rats injected with virulent tubercle bacilli did not die of tuberculous infection. A majority of rats similarly infected with tubercle bacilli, but treated with cortisone died of tuberculosis. Striking histologic differences were noted. Localized granulomata were seen in the organs of rats injected only with tubercle bacilli, whereas the lesions in the animals also receiving cortisone were diffuse and contained fewer inflammatory cells. The influence of cortisone on experimental tuberculosis appears to be a lowering of the host's natural resistance. The possible modes of action resulting in this are discussed.

BAVIN, E. M., BEACH, A. S., FALCONER, R. & FRIEDMANN, R. (1952). **Nisin in experimental tuberculosis.** — *Lancet.* **262,** 127 - 129. [Author's summary slightly modified.] **2365**

The in-vitro activity of crystalline nisin [an antibiotic produced by a strain of *Streptococcus lactis*], penicillin, and streptomycin were compared. Nisin was less effective than penicillin against the Gram-positive organisms used, but against *Mycobact. tuberculosis* its action was about equivalent to that of streptomycin. The effect of nisin on the course of TB. in mice was compared with that of streptomycin and *p*-aminosalicylic acid. Intraperitoneal and oral nisin proved useless.

In-vivo/in-vitro tests in g. pigs indicated that it was very difficult to maintain non-toxic blood-nisin levels high enough to suppress the growth of tubercle bacilli. Nisin seemed to be less active against virulent strains of *M. tuberculosis* than was supposed, and to be less toxic in g. pigs than has been reported for rabbits, the LD50 being about 100 mg. per kg. of body weight when given very slowly by the intravenous route. The effects of nisin on respiration, isolated heart, uterus, and ileum were described.

ROBINSON, E. M. & OSBORN, S. M. (1951). **The haemagglutination test for tuberculosis.** —*J.S. Afr. vet. med. Ass.* **22,** 121-127. **2366**

Haemagglutination occurs when sheep red cells which have been sensitized with extracts of the tubercle bacillus (concentrated tuberculin without glycerin) are exposed to the action of serum from human beings or cattle affected with TB. Preliminary work at Onderstepoort showed that the test gave fair agreement with the results of the tuberculin test and, in a small number of animals, with the P.M. findings, although some cattle in which lesions were found P.M. and which had reacted to tuberculin gave negative haemagglutination tests. Of 42 cattle which reacted to tuberculin, 11 were negative to the

haemagglutination test: in eight of the 11 tuberculous lesions were found P.M. [These results suggest that, although the haemagglutination test might prevent a few animals being condemned in error by the tuberculin test, it would allow a considerable number of tuberculous animals to escape.]—E. G. WHITE.

HEDSTRÖM, H. (1950). Réactions spécifiques et non spécifiques de la peau lors de la tuberculinisation intradermique. [**Non-specific reactions to the intradermal tuberculin test.**]—*Bull. Off. internat. Epiz.* **34**, 316-323. **2367**

From an examination of 74 herds (841 animals) with "skin tuberculosis", the duration of allergy to tuberculin was found to be one year in 225 animals, two years in 331, three in 139, four in 112, and five in 19. No difference in reaction was noted using P.P.D. tuberculin or tuberculin grown in synthetic medium and concentrated.

Allergy to tuberculin was also found in herds with *Trichophyton* infection; it disappeared after the infection was cured.

—W. R. BETT.

GREEN, H. H. (1951). **Discussion on tuberculins in human and veterinary medicine.**—*Proc. roy. Soc. Med.* **44**, 1045-1050. [French summary. English summary copied *verbatim* **2368**

A plea is put forward for abolition of the use of "Old Tuberculin" by the medical profession and substitution of "purified protein derivative". In veterinary practice such substitution is making rapid headway.

P.P.D. of constant characters, containing about 90% of true tuberculo-protein in the dry state, is easily prepared by the very simple "Weybridge technique". Still higher purification can be accomplished if desired. As ordinarily made it has a potency such that a solution containing 2 mg. per ml. matches international standard Old Tuberculin, i.e. is equivalent to 100,000 units per ml. Solutions can be accurately standardized by chemical analysis and the wide variations inherent in ordinary biological standardization can be so avoided. Because of the high losses of active principle during heat concentration of media in which *M. tuberculosis* has been grown "P.P.D. Tuberculin" is much cheaper to manufacture than "O.T".

The specifications, both for Old Tuberculin and protein derivative tuberculin, in The British Pharmacopoeia and Pharmaceutical Codex are criticized.

The distinction between "potency" and "specificity" is discussed and the meaning of the term "specificity number" is explained.

The use of mammalian and avian P.P.D. tuberculins in differentiating specific from non-specific infections in bovines, under the tuberculosis eradication scheme of the Ministry of Agriculture, is indicated.

MILES, A. A. (1951). **The laboratory assay of tuberculin.**—*Proc. roy. Soc. Med.* **44**, 1050-1052. [French summary. Author's summary copied *verbatim.*] **2369**

Potency tests of diagnostic tuberculoproteins usually consist of finding concentrations of the preparation which produce in the sensitized guinea-pig tuberculin skin-reactions of the same size and intensity as those produced by a standard tuberculin. Preliminary titrations may be needed; and only the approximate error of the test can be determined. Taking advantage of the fact that the diameter of tuberculin lesions in the skin of the guinea-pig's flank is proportional to the log. of the dose of tuberculin, a better potency test was devised which, without preliminary titrations, permits a direct comparison of potency of two tuberculoproteins, and an estimation of the fiducial limits of error of the comparison. For a given number of guinea-pigs, the new test gives a great deal more information than the usual tests.

From a consideration of the slope of the dosage-response line, and of changes in the estimated potency of a preparation when the guinea-pigs are sensitized by different antigens (e.g. living or dead tubercle bacilli, or living BCG) it is possible to detect qualitative differences in, for example, Old Tuberculin and P.P.D., and in the specificity of the sensitivity induced by various tuberculous antigens. Such differences may invalidate the assay of one kind of tuberculoprotein in terms of another.

CRUICKSHANK, C. N. D. (1951). **Sensitivity to tuberculin.** [Correspondence.]—*Nature, Lond.* **168**, 206-207. **2370**

Using skin explants and comparing the effect *in vitro* of tuberculin on skin from tuberculin-sensitized and from normal g. pigs, there were no observable differences in the quality of growth between sensitized and non-sensitized skin. C. concluded that the tuberculin reaction is not associated with a direct cytotoxic effect on sensitized skin.—G. V. LAUGIER.

FABRIZIO, A. M. (1952). **Effect of purified fractions of tuberculin on leukocytes from normal and tuberculous animals in tissue cultures.**—*Amer. Rev. Tuberc.* **65**, 250-271. [French

and Spanish summaries. Author's summary copied *verbatim*.] 2371

Plaques made of leukocytes from peritoneal exudates induced by injection of balanced salt solution in normal and tuberculous guinea pigs furnished a highly satisfactory means of studying the effects of various purified tuberculin proteins, polysaccharides, and nucleic acid, as well as tuberculin itself, on these cells in tissue cultures. In confirmation of earlier work, the tuberculins, Old Tuberculin (OT) and standard purified derivative (PPD-S), were found to produce a specific inhibition to migration and to cause injury to tuberculous leukocytes. The differential, however, between the specific and nonspecific effects was relatively small. Purified tuberculin protein fractions A, B, and C, which differed in their chemical and biological properties and all of which were isolated from unheated culture filtrates, were found specifically to inhibit migration of tuberculous cells in a concentration of 0·1 mg. or more per ml. The inhibition of migration caused by the A and C proteins on the tuberculous cells appeared to be more highly specific than that caused by the B protein. Injury to the cells also occurred, as evidenced by granulation, agglutination, vacuolization, and disintegration. A rounding or swelling of the cells accompanied by an apparent increase in stickiness, causing an end-to-end aggregation of flattened cells called stranding, was a characteristic specific effect of some of the A protein fractions; while clumping or "balling" of the tuberculous leukocytes appeared to be specific for all of the C proteins. Similar clumping frequently observed with OT and PPD-S may have been due to the presence of C protein in these preparations. Tuberculin polysaccharides I and II in comparable dilutions had no specific injurious action on tuberculous leukocytes, but in higher concentrations they had some nonspecific effect. Tuberculin nucleic acid, commercial thymus nucleic acid, and a highly purified (Hammarsten) thymus nucleic acid produced no significant inhibitory effect on tuberculous leukocytes. However, the individual leukocytes showed greatly extended cellular processes.

Gell, P. G. H. & Hinde, I. T. (1951). **The histology of the tuberculin reaction and its modification by cortisone.**—*Brit. J. exp. Path.* **32**, 516-529. [Authors' summary modified.] 2372

The histological reaction to tuberculin in the skin of sensitized rabbits was analysed and compared with the reaction to a non-specific irritant (brain phospholipid) at 4 and 22 hours. The effects of cortisone on each type of lesion were studied and contrasted: visual impressions were confirmed by means of differential cell-counts on sections. The injection of tuberculin caused a diffuse reaction with characteristic multiple perivascular accumulations of mononuclear cells, the result both of cellular infiltration and of local proliferation. Necrosis did not appear to play any part when small doses of tuberculin were used. The resulting tissue was likened to that of a local lymph-node. In both types of lesion the mononuclear component was markedly reduced by cortisone, the polymorphonuclear component being less affected. The infiltration of cells from outside appeared to be more affected than the proliferation of indigenous histiocytes. Cortisone had a more striking effect on the tuberculin lesion only because this contained a higher proportion of mononuclear cells. There was no evidence of a specific anti-allergic activity. The effects of cortisone on the vascular reaction were described and were in agreement with this analysis.

Rufin, M. & Verdier, J.-R. (1950). Vaccinations par le B.C.G. dans le Département du Cher. Une expérience sur le plan départemental. **[B.C.G. vaccination of cattle in the Cher district in France.]**—*Bull. Acad. vét. Fr.* **23**, 399-401. Discussion p. 401. 2373

Cattle in the Department of Cher are heavily infected with TB. In the B.C.G. campaign started by the authors in 1949 a sanitary inspector is responsible for seeing that each vaccinated calf is segregated from birth, with proper diet precautions. A departmental register of vaccination has been created. Vaccination is done within 48 hours of notification, though never earlier than 72 hours after birth.

—W. R. Bett.

Smythe, R. H. (1951). **Some observations on Johne's disease.**—*Vet. Rec.* **63**, 359-363. 2374

S. endeavoured to correlate the clinical course of Johne's disease in cattle with the rise and fall in their sensitivity to avian type tuberculin. Records of 22 animals were given, examples being chosen to illustrate the following points:— A high reaction to avian type tuberculin in a young animal may indicate a recent infection. A persistent high level, often with some undulation, suggests a state of comparative resistance, whereas a sudden fall in sensitivity to avian type tuberculin often precedes clinical breakdown. Positive faecal examinations usually coincide with low levels of reaction to avian type tuberculin.

Attention is drawn to the findings of perirectal oedema at P.M. examination of some

cattle and the significance of single acid-fast organisms in faecal smears was discussed.
—E. J. H. Ford.

Verge, J., Cauchy, L. & Caziot, G. (1951). A propos d'un cheval "morveux". **[Suspected glanders in a horse in France.]**—*Rec. Méd. vét.* **127**, 65-73. **2375**

The authors described in some detail the case of a horse that had been suspected of being affected with glanders, the authors describing it as "pseudo-glanders". The animal had given a positive intradermo-palpebral reaction to mallein and as there was considered to be doubt as to the specificity of the reaction, re-tests were made using the intradermo-palpebral test, the conjunctival test and the skin test, the reactions this time all being negative. The horse was killed and examined P.M. There was some ulceration in the septum nasi, and there were bilateral lesions of the nasal mucosa. Attempts to grow the organism from lesions yielded negative results.—G. P. Marshall.

Rice, C. E. & Konst, H. (1952). **Studies by complement-fixation methods of malleins produced in broth and synthetic media. II. Comparative tests of complement-fixing activities.**—*Canad. J. comp. Med.* **16**, 13-19. [Authors' summary modified.] **2376**

Two complement-fixation techniques were used in titrating the activities of malleins prepared in broth and synthetic media with antimallein sera. These antisera were prepared in horses and rabbits by the injection of either broth or synthetic mallein. Because the synthetic-mallein antisera were usually of lower titre than the broth-mallein antisera it was necessary to use them in lower dilutions in order to demonstrate the maximum complement-fixing activity of the malleins. However, when both kinds of antisera were used in sufficient excess, the titres obtained for a given synthetic or broth mallein were relatively comparable irrespective of whether the antiserum had been produced to broth or synthetic mallein. Higher titres were recorded with antisera prepared by the injection of killed suspensions of *Pf. mallei*.

Of the two strains of *Pf. mallei* that have been used for many years in the authors' laboratory in the production of mallein for diagnostic purposes, the more virulent and more rapidly growing strain, No. $326A_1$, consistently produced mallein of higher complement-fixing activity in both broth and synthetic medium than the avirulent No. 325A strain.

Tests with antimallein horse sera suggested that harvesting cultures after a shorter period of incubation might yield a synthetic mallein of higher titre than incubation for the longer period. Attempts to develop an intradermal test for mallein sensitivity in g. pigs failed.

Yamagiwa, S. & Iwamori, H. (1951). **[Studies on the chemotherapy of experimental glanders. IV. Investigation of the involved testicles of glandered male guinea-pigs.]**—*Jap. J. vet. Sci.* **13**, 55-68. [English summary.] **2377**

The authors examined the histopathological changes in testicles of glandered g. pigs treated with sulphapyridine. Frequent relapses occurred even after repeated treatments.—Kogi Saito.

Whitten, L. K. (1952). **A further note on lameness in sheep due to** *Erysipelothrix rhusiopathiae*. — *Aust. vet. J.* **28**, 6-7. [Author's summary slightly modified.] **2378**

Lameness in sheep due to *E. rhusiopathiae*, was reported in a mob of pregnant ewes. The disease was similar to that seen after dipping in derris or benzene hexachloride washes that lack suitable bacteriostatic agents [*V.B.* **19**, 1439]. The disease in this case was not associated with dipping and direct infection from the soil was inferred.

Schoop, G. (1951). Der Herzklappenrotlauf, eine Sepsis lenta des Schweines. **[***Erysipelothrix rhusiopathiae* **infection of the cardiac valves in pigs.]**—*Mh. prakt. Tierheilk.* **3**, 129-136. **2379**

This infection is due to attenuated bacteria; it is continually disseminated by way of the blood and can therefore not be regarded as a mere localisation.—G. P. Marshall.

Bergmann, J. (1951). Über die Empfänglichkeit von Ferkeln für die künstliche Rotlauf-Infektion. **[Susceptibility of piglets to induced** *Erysipelothrix rhusiopathiae* **infection.]** — *Mh. prakt. Tierheilk.* **3**, 371-373. **2380**

Piglets of the same litter began to show susceptibility to *E. rhusiopathiae* infection induced by scarification, at the age of 15 weeks.
—G. P. Marshall.

Seaman, A. & Woodbine, M. (1952). **Effect of sera on the fermentation reactions of** *Erysipelothrix rhusiopathiae*.—*Brit. vet. J.* **108**, 93-96. [Authors' summary copied *verbatim*.] **2381**

A maltase is present in horse, sheep, rat and mouse sera, possibly in bovine, but not in rabbit, guinea-pig or human serum. The maltase is inactivated only by temperatures which destroy the beneficial effect of the serum upon the growth of *E. rhusiopathiae*. The growth of

E. rhusiopathiae is not increased to a uniform extent by sera from differing species.

The variable fermentation of maltose obtained previously was presumably due to a combination of the effects of the type of serum used and the presence of an enzyme. This cannot, therefore, be used as a differential reaction as suggested.

It is inadvisable to use any serum in a carbohydrate (maltose) fermentation test which has not been tested for its specific effect on the growth of the organism as well as for the presence of a maltase. For *E. rhusiopathiae*, guinea-pig serum is probably the most favourable.

TRAWINSKI, A. (1949). **Preventative vaccination of pigs against swine erysipelas.**—*F.A.O. Agric. Studies.* No. 10. pp. 1-7. **2382**

The importance of swine erysipelas in Europe is stressed and methods of prophylaxis are reviewed. In Poland an approximate morbidity rate of 3% has followed the use of hyperimmune serum and virulent organisms in 'simultaneous' vaccination. The rate fell to about 1% on two million pigs which received vaccine as described by Staub.—K. G. TOWERS.

KATIC, R. (1951). Une possibilité d'emploi du vaccin associé contre le rouget du porc et le tétanos. [**Possibility of simultaneous vaccination against swine erysipelas and tetanus.**]—*Bull. Off. internat. Epiz.* 35, 232-237. **2383**

By the simultaneous injection of a swine erysipelas anaculture mixed with tetanus anatoxin K. succeeded in establishing a satisfactory immunity to both diseases.—D. LUKE.

VAN DORSSEN, C. A. & JANSEN, J. (1951). Over het practische belang van listeria-infectie. [*Erysipelothrix* (*Listeria*) *monocytogenes* **infection in the Netherlands.**] — *Tijdschr. Diergeneesk.* 76, 756-761. [English summary.] **2384**

A general reference to the geographical incidence of the disease, together with details of the cultural characters of the organism and of 25 strains from human and animal hosts, examined bacteriologically by the authors.

—J. EDWARDS.

KASCHULA, V. R. & TRUTER, D. E. (1951). **Fowl cholera in sea-gulls on Dassen Island.** —*J.S. Afr. vet. med. Ass.* 22, 191-192. [Abst. from authors' summary.] **2385**

The authors described mortality in sea-gulls (*Larus dominicanus*) on Dassen Island, one of the "guano" islands, due to *Pasteurella aviseptica* and discussed its possible connexion with acute virulent outbreaks in poultry flocks on the adjacent mainland. The disease was considered to be enzootic on the Island.

CARTER, G. R. (1952). **The type specific capsular antigen of** *Pasteurella multocida.*—*Canad. J. med. Sci.* 30. 48-53. [Author's summary modified.] **2386**

Three distinct serological types of *Past. multocida* were identified by means of precipitation tests in which the antigen consisted of a soluble capsular substance presumably polysaccharide in nature. The type specificity of this capsular antigen was confirmed by a capsular swelling technique and this method was recommended for the routine typing of *Past. multocida.*

DE BLIECK, L. (1950). De therapie van coryza infectiosa gallinarum Type II (Nelson) met streptomycine. [**Streptomycin treatment in infectious fowl coryza.**]—*Tijdschr. Diergeneesk.* 75, 538-541. [English summary. Translated *verbatim* in *Vet. Rec.* 62, 787.] **2387**

An account of experiments on 19 fowls.

—C. A. VAN DORSSEN.

ØRSKOV, F. (1951). **On the occurrence of E. coli belonging to O-group 26 in cases of infantile diarrhoea and white scours. (Preliminary report.)**—*Acta path. microbiol. scand.* 29, 373-378. [In English. Abst. from author's summary.] **2388**

An account was given of a biochemical and serological examination of *Bact. coli* strains belonging to O-group 26, isolated from cases of infantile diarrhoea.

The strains could be divided into three fermentation types, the antigenic formula of the first two being: 26:B6— non-motile, the third having the formula: 26:B6:11.

Of *Bact. coli* strains isolated from autopsies of new-born calves that had died of white scours, strains belonging to O-group 26 were found which both serologically and biochemically were probably identical with the strains isolated from infants.

ULBRICH, F. (1951). Untersuchungen über die Antigenstruktur von B. coli, die aus Koligranulomen von Hühnern isoliert wurden. [**Antigenic structure of** *Bact. coli* **isolated from intestinal granuloma of fowls.**]—*Mh. Vet.-med.* 6, 395-399. **2389**

A cultural and serological examination of 36 strains of *Bact. coli* isolated from intestinal granuloma of fowls was reported. Both O and

K antigens were recognized in 22 typical strains: the remainder showed antigenic properties resembling those of non-pathogenic strains.

—J. A. NICHOLSON.

GRATZL, E. (1950). Infektionsversuche mit Salmonella abortivoequina — Kulturen an Pferden mit Erscheinungen der zweiten Phase der Pferdegrippe. **[Effect of experimental infection of horses with *S. abortus-equi*. in the second phase of equine influenza.]** —*Wien. tierärztl. Mschr.* **37**, 1-8. 2390

Experimental oral infection with *S. abortus-equi* of horses with streptococcal infections in the second phase of influenza led to violent local and general reactions with septicaemia, damage of the myocardium and broncho-pneumonia, which was fatal in one case out of five. Two healthy horses experimentally infected with the Salmonella developed only mild reactions.

—A. MAYR-HARTING.

LILLEENGEN, K. & MICKOW, R. (1952). Undersökningar över förekomst av Salmonella hos friska slaktdur. [*Salmonella* **in healthy slaughter animals.**]—*Nord. Vet.-Med.* **4**. 127-132. [In Swedish. English and German summaries. Abst. from English summary.] 2391

A report of investigation for salmonella of 56 carcasses of pigs, 106 of cattle and 102 of young calves slaughtered during the autumn of 1947 and 1948 at the Stockholm abattoir and passed as healthy. The liver, the bile and the contents of the small intestine were examined in the case of pigs and in the case of cattle the mesenteric lymph nodes in addition, the material being cultivated in tetrathionate enrichment medium. *S. cholerae-suis* var. *kunzendorf* was isolated from the liver and from the gall bladder respectively in two of the pigs. No salmonella were isolated from cattle.

MCCULLOUGH, N. B. (1951). **Relative pathogenicity of certain *Salmonella* strains for man and mice.**—*Publ. Hlth Rep., Wash.* **66**, 1538-1540. [Author's summary slightly modified.] 2392

The pathogenicity for man of three strains each of *S. meleagridis* and *S. anatum* and one strain each of *S. newport*, *S. bareilly*, and *S. derby* were determined by administering these organisms to human volunteers. The ID_{50} for mice, using the intra-abdominal route, was determined for each strain. There was no apparent relationship between the pathogenicity of these strains for human volunteers and the ID_{50} for mice.

MURA, D. (1949). Sulla profilassi dell'aborto ovino da salmonella. **[Prophylaxis of salmonella abortion in sheep.]**—*Clin. vet., Milano.* **72**, 37-40. 2393

The use of serum and formolized vaccine has given excellent results in the control of salmonella abortion in ewes in Sardinia.

—B. BALDELLI.

ADLER, H. E., WILLERS, E. H. & LEVINE, M. (1951). **Incidence of Salmonella in apparently healthy dogs.**—*J. Amer. vet. med. Ass.* **118**, 300-304. [Abst. from authors' summary.] 2394

Salmonella were detected in 38 of 294 apparently healthy dogs at the quarantine station at Hawaii and in 1 sick puppy born there. *Salmonella typhi-murium* was isolated P.M. from the spleen of the puppy; *S. anatum* was found in the faeces of 20, *S. montevideo* in 14, *S. bovis-morbificans* in 3, and *S. bredeney* in 1 of the animals examined.

CLARENBURG, A. & VINK, H. H. (1950). Salmonella-infecties bij eenden. [*Salmonella* **infections in ducks.**]—*Tijdschr. Diergeneesk.* **75**, 439-440. 2395

The authors isolated salmonella from the faeces of 61 out of 602 ducks; in two cases two species of salmonella were present in the same bird. *S. meleagridis* was present in 18, *S. typhimurium* in 17, *S. saint-paul* in 11, *S. anatum* in 14, *S. newport* in one, *S. senftenburg* in one and *S. ballerup* in one.

—C. A. VAN DORSSEN.

LAGERGREN, B. & ÖSTERLING, S. (1951). **A new Salmonella type (S. stockholm).**—*Acta path. microbiol. scand.* **29**, 386. [In English. Authors' summary copied *verbatim*.] 2396

The authors describe a new *Salmonella* type from Sweden: *S. stockholm* = III, $X:y:z_6$.

HAJNA, A. A. & DAMON, S. R. (1950). **Polyvalent *Salmonella* "H" agglutination as a rapid screening test for *Salmonella* organisms.** —*Publ. Hlth Rep., Wash.* **65**, 116-118. 2397

The authors recommended that cultures giving the biochemical reactions of salmonella should be screened by an agglutination test with a polyvalent *Salmonella* H serum at the routine laboratory before being sent to a reference laboratory.

[In Gt. Britain a polyvalent *Salmonella* H serum is available for this special purpose.]

—A. MAYR-HARTING.

BOYD, J. S. K., PARKER, M. T. & MAIR, N. S. (1951). **Symbiotic bacteriophage as a 'marker'**

in the identification of *Salmonella typhimurium*.—*J. Hyg., Camb.* **49,** 442-451. [Authors' summary copied *verbatim*.] **2398**

A collection of *S. typhi-murium* strains, isolated during 11 months, in or near Manchester, was examined for the presence of symbiotic bacteriophage. In all, 177 strains derived from eighty-three incidents were investigated. The different phages, or combinations of phage, allowed these strains to be divided into eleven varieties. Three hitherto undescribed types of phage were discovered. With two minor exceptions, all groups of strains isolated from associated cases of infection carried the same type of phage, so that the 'typing' was in agreement with epidemiolgical expectations. In the two exceptions, the relationship of the cases was not intimate, and infection from different sources was an obvious possibility.

It is concluded that this is a reliable method of typing. It is probably applicable to other groups of bacteria. Its value would be enhanced by the discovery of a simpler method than filtration for sterilizing the lysate without damaging the phage.

LILLEENGEN, K. (1950). **Typing of** *Salmonella dublin* **and** *Salmonella enteritidis* **by means of bacteriophage.**—*Acta path. microbiol. scand.* **27,** 625-640. [In English. Abst. from author's summary.] **2399**

L. found that *S. dublin* and *S. enteritidis* could be typed by means of anti-O phages. Eight selected *S. dublin* phages and six selected *S. enteritidis* phages were tested on 129 strains of *S. dublin* and 116 strains of *S. enteritidis*. *S. dublin* could be divided into six types and subtypes by means of five of the *S. dublin* phages, while *S. enteritidis* could be differentiated into eight types by four of the *S. enteritidis* phages. All the strains examined could be typed despite the variation in origin. Strains epidemiologically related were of the same phage type.

Using each of three *S. dublin* phages it was possible to separate *S. dublin* and *S. enteritidis* with the same certainty as by serological means.

The phage-typing method may be of valuable aid in tracing sources and paths of infection in outbreaks of *S. dublin* and *S. enteritidis* infections in man and domestic animals.

SMITH, H. W. (1951). **The typing of** *Salmonella dublin* **by means of bacteriophage.**—*J. gen. Microbiol.* **5,** 919-925. [Author's summary copied *verbatim*.] **2400**

By the use of six phages, 294 (94%) of 306 strains of *Salmonella dublin* were classified into 11 types. The remaining 12 strains were insusceptible to all phages. Unfortunately, for the purposes of distinguishing strains of epidemiological interest, 66·9% of the strains belonged to the same type. Acquired phage resistance was responsible for many of the strains being regarded as different phage types.

The phages were also active on *S. rostock, S. gallinarum* and on a small proportion of *S. pullorum* strains tested. They were not active on *S. enteritidis*. Three phages possessed a different range of lytic activity despite the fact that Bail's cross-resistance tests suggested that they were identical.

The ability to type a species of *Salmonella* satisfactorily by means of anti-O phages appears to depend mainly on a large proportion of the strains having acquired resistance to different phages.

BEGANOVIĆ, A. H. (1951). Neka opažanja o djelovanju bakteriofaga na S. pullorum. [**The action of bacteriophage on** *Salmonella pullorum*.]—*Vet. Arhiv.* **21,** 421-426. [Abst. from French summary.] **2401**

Bacteriophage was tested on 90 different strains of *S. pullorum*. All were lysed completely. The bacteriophage had no therapeutic or prophylactic action.—D. LUKE.

ANON. (1951). **Proceedings of the twenty-third annual meeting of the Northeastern Conference of Laboratory Workers in pullorum disease control, June 26 and 27, 1951.** pp. 71. Connecticut: College of Agriculture, University of Connecticut, Storrs, Connecticut, U.S.A. [Mimeographed.] **2402**

The examination of 1,679 pullorum cultures from 27 States of the U.S.A. revealed an incidence of 26·9% of variant forms. Eleven of these cultures appeared to be complete in antigenic components. Antigen prepared from one of these strains containing all the antigenic components yielded a high percentage of atypical reactions. Bacteriological examinations of incubator débris before and after fumigation in commercial hatcheries indicated the need for a standardized fumigation procedure. Outbreaks of *S. gallinarum* infection in young chicks were reported in circumstances which strongly suggested egg borne infection.

Avian encephalomyelitis virus ("epidemic tremor") remained viable at −20°C. after 428 days. Adult birds were successfully infected *via* the intraperitoneal route.

Further immunological studies with the B_1 Strain of Newcastle disease virus were reported. A serum dilution technique was described for the detection of chick bronchitis virus antibodies. Methods for the isolation of the so-

called chronic respiratory disease virus were given.—D. LUKE.

VAN DRIMMELEN, G. C. (1949). **A new aid for the control of brucellosis [ring test].**—*J.S. Afr. vet. med. Ass.* **20,** 80-88. **2403**

The author has developed a modification of the "ABR" (Abortus Bang Ringprobe) test which can be used for milk from individual cows and which is claimed to distinguish between vaccinated and naturally infected cattle. For use with individual milk samples three tubes are used. They contain undiluted milk and dilutions of 1:2 and 1:4 with non-reacting milk. One drop of antigen is added to 1 ml. of the milk dilutions, the tubes are shaken and are then incubated for 40–50 min. Naturally infected animals give positive reactions in all three tubes (violet cream layer). In negative animals the milk is purplish with a white cream layer. Animals vaccinated with Strain 19 more than four months previously may give a slight positive reaction in the first tube, but there is no reaction in the other two tubes. Udder secretion free from cream, taken from an infected cow, will give a purple deposit in the first tube and a purple ring (cream being present from the milk diluent) in the other tubes.

It is claimed that this test will distinguish between cows with udder infection and cows vaccinated with Strain 19 vaccine four months or more previously; this is illustrated by a chart of the agglutinin titre in the blood and the results of the dilution milk ring test in a vaccinated lactating cow. Whereas the blood titre remains for months or sometimes for years the ABR dilution test gives a negative reaction before the tenth week.

The modified ABR test is recommended for extensive field trial on account of its reliability, rapidity, special sensitivity and ability to distinguish between reactions caused by vaccination and by natural infection.

[Details of experimental findings were given in a later paper (see *V.B.* **21,** 3491.)]

—E. G. WHITE.

WASHKO, F. V., DONHAM, C. R., HUTCHINGS, L. M. & HEIMLICH, A. (1952). **Recovery of *Brucella* from tissues of cattle exposed to *Brucella abortus*.**—*J. Amer. vet. med. Ass.* **120,** 82-84. [Abst. from authors' summary.] **2404**

Br. abortus was recovered from widespread areas in the carcasses of 9 of 18 cattle examined. In all cases when *Br. abortus* was isolated from the udder, the organism was also recovered from tissues other than mammary or reproductive tissues. Brucella isolations coincided in all cases with higher blood serum-agglutination titers.

RENOUX, G. (1950). Prophylaxie des brucelloses. La vaccination préventive des animaux domestiques par le vaccin du C.R.F.O. **[Immunization of domestic animals against brucellosis by the C.R.F.O. vaccine.]**—*Rev. Immunol. Therap. antimicrob.* **14,** 279-290. **2405**

C.R.F.O. vaccine (prepared at the Centre de Recherches sur la Fièvre Ondulante, Montpellier) is composed of a gluco-lipoid antigen from *Br. melitensis,* together with a live, avirulent strain of *Br. abortus* B. 112. It was harmless, and protected 90% of g. pigs, ewes and heifers exposed to severe infection.—N. DEAN.

SEELEMANN, M., PILZ, W. & MEYER, A. (1951). Experimenteller Beitrag zur Frage der Beziehungen zwischen Virulenz und Immunisierungsvermögen verschiedener z. T. künstlich abgeschwächter Abortus-Bang-Stämme. **[Relation between virulence and immunising properties of attenuated strains of *Brucella abortus*.]**—*Mh. prakt. Tierheilk.* **3,** 360-371. **2406**

Loss of virulence in attenuated strains of *Br. abortus* does not necessarily entail loss of immunizing properties.—G. P. MARSHALL.

GREGORY, T. S. (1951). **A comparison of the effects of intracaudal and subcutaneous vaccination of calves with *Brucella abortus*, strain 19. I. Maximum post-vaccination titres and persistence of serum agglutinins.**—*Aust. vet. J.* **27,** 319-325. [Author's summary copied *verbatim.*] **2407**

Two groups of about 60 calves, each with comparable sub-groups of younger (7–8 months) and older (9–10 months) animals, were vaccinated either by the injection of 1·0 ml. of strain 19 vaccine intracaudally or of 5·0 ml. subcutaneously. With both vaccination methods, maximum serum agglutinin titres were developed in the third week after vaccination and the mean maximum titre for older calves was more than 40 per cent. greater than that for younger calves.

The intracaudal method produced a much greater serological response than the subcutaneous method; the mean maximum titre for the intracaudal group was almost twice as great as that for the subcutaneous group, a difference with high statistical significance.

There was no significant group difference in the proportion of animals returning to negative diagnostic status after 12 months. Within each

group, however, older and younger subgroups showed a difference in that respect; for each group this difference due to age at vaccination was of the same order. The proportion of all younger animals returning to negative status in 12 months was 75 per cent. but of all older animals, only 30 per cent.; there was little change in those proportions at the end of 2 years. Among the definitely positive reactors, on both occasions, titres only very rarely exceeded the minimum diagnostic level. There was no significant serological difference between vaccinated animals maintained in an uncontaminated environment and vaccinated animals which failed to become infected when exposed to natural infection.

RENOUX, G. (1951). La lutte contre les brucelloses à travers l'activité du Centre de Recherches de Montpellier sur la fièvre ondulante. **[The work of the Montpellier centre of research on brucellosis.]**—*Bull. Off. internat. Epiz.* **35**, 378-389. **2408**

R. gave an account of the work of the Montpellier centre for research on brucella infection which was founded in 1929 by Dr. R. M. Taylor for the Rockefeller Foundation and handed over in 1935. He gave details of the production of diagnostic agents, of the numbers of animals inoculated, of strains identified etc., and of the number of publications issued during the 21 years since its foundation.

—G. P. MARSHALL.

ABBONDANZA, S. (1951). E una leptospirosi l'anemia infettiva dei cavalli della zona risiera lombardo-piemontese? **[Is equine infectious anaemia in the rice-producing districts of North-West Italy a leptospirosis?]**—*Clin. Vet. Milano.* **74**, 10-13. **2409**

As equine infectious anaemia frequently occurs in the rice-producing districts of Italy where human leptospirosis is common, the author believes that the disease in horses may be caused by leptospira. Of two groups of horses serologically examined (a) clinically suspected and (b) healthy animals, positive reactors to the agglutination test for leptospirosis were found in group (a) only.—B. BALDELLI.

SIMMONS, G. C. (1950). **The effect of formalin on leptospirae in calf urine.**—*Qd. J. agric. Sci.* **7**, 80-84. **2410**

Urine from two female calves naturally infected with leptospira was collected in sterile containers. The samples were divided within three hours into six sterile screw-topped jars. Formalin was added to one pair of jars to make a final concentration of 0·2%, to one pair 0·5% and the third pair served as controls. One jar from each pair was incubated at 37°C. and the other was left at room temperature (21° - 31°C.) The specimens were examined by dark-ground illumination and were also stained by the Fontana method. The morphology of the leptospira in the urine containing 0·5% formalin was not appreciably altered after five days' storage at either 37°C. or at room temperature. Abnormal types were frequent in the samples containing 0·2%. It was sometimes difficult to recognize organisms as leptospira, but in most cases they could be detected. In unpreserved urine leptospira were on no occasion identifiable after three days' storage, and at 37°C., after one day's storage, were only identified on one occasion. It is concluded also that dark-field illumination is best for the detection of leptospira except in heavily contaminated specimens, when Fontana stain methods should be used in addition.

—D. F. STEWART.

NISBET, D. I. (1951). *Leptospira icterohaemorrhagiae* **infection in pigs.**—*J. comp. Path.* **61**, 155-160. **2411**

An account of *L. icterohaemorrhagiae* infection in two pigs on different farms. The organism was isolated in culture by inoculation of g. pigs and cultivation from the tissues. Details were given of agglutination tests against the organism with blood serum from pigs on one of the farms.

The use of the g. pig as the test animal and difficulties in maintaining cultures were discussed. Penicillin was given to 20 in-contacts on the one farm and to two on the other and there was only one death.

ZURECK, F. & SCHWARZ, J. (1951). Untersuchungen und Beobachtungen über die Leptospirose bei Berliner Hunden. **[Leptospirosis in dogs in Berlin.]**—*Mh. prakt. Tierheilk.* **3**, 213-220. **2412**

37·9% of blood samples taken from Berlin dogs were serologically positive for *L. canicola* and *L. icterohaemorrhagiae,* the vast majority of these having high titres only for the former variety.—G. P. MARSHALL.

GORRIE, C. J. R. (1950). **Vaccination against spirochaetosis in fowls.**—*Aust. vet. J.* **26**. 308-315. **2413**

A record of results of laboratory experiments with an egg-grown vaccine. Seven-day embryos are inoculated into the yolk sac with approx. 0·1 ml. infective serum, incubated for a further seven days and the vaccine prepared by grinding the embryo and chorioallantoic membrane. Three hundred ml. saline are added

to each 100 g. embryo pulp (approx. 10 eggs) and formalin or phenol added. The vaccine is given subcutaneously. Challenge of immunity has been by oral administration of infective blood clot, but the number of infective doses such clot contains has not been determined.

Phenolized vaccine gave only a short-term immunity, even with two doses at an interval of a week, although in one field trial it significantly reduced the morbidity. Formolized vaccine has given immunity to such a challenge 15 weeks (the maximum period so far tested) after vaccination with a dose of 0·5 or 1·0 ml.—L. Hart.

Sterne, M., Thorold, P. & Scheuber, J. R. (1951). **A note on a new method for preparing a potent anti-chauvoei vaccine.**—*J. comp. Path.* **61,** 150-154. [Authors' summary copied *verbatim.*] **2414**

A method has been described for producing potent anti-chauvoei vaccine in intussuscepted cellophane tubes. Yields of 100,000 to 200,000 doses per culture vessel were obtained.

Doses of 1 ml. of the diluted vaccines were effective in eliciting a high degree of immunity in sheep. The reactions to vaccination were in all cases negligible.

Dafaalla, E. N. & Soltys, M. A. (1951). **Studies on agglutination of red cells by *Clostridia*. I. *Cl. septique*.**—*Brit. J. exp. Path.* **32,** 510-515. [Authors' summary slightly modified.] **2415**

Cultures of *Cl. septicum* agglutinate erythrocytes of various species of animal in a manner similar to that of influenza virus. Haemagglutination can be neutralized by specific antisera.

The agglutinating factor is associated with the bacterial cell, but not with the toxins; it is thermolabile, and is not destroyed by 0·5% formalin, 0·5% phenol or absolute alcohol.

Berg, M., Levinson, S. A. & Wang, K. J. (1951). **Effect of experimental shock induced by *Clostridium perfringens* toxin on the kidneys of dogs.**—*Arch. Path.* **51,** 137-153. [Authors' summary slightly modified.] **2416**

Lethal doses of *Clostridium welchii* toxin injected intramuscularly produced extensive edema at the site of injection, hemoconcentration, alterations in the electrolytes of the blood, a gradual drop in blood pressure reaching the shock level and a significant reduction in the volume of urine secreted that could not be correlated with the blood pressure and alterations in the urinary constituents.

In the proximal convoluted tubules a correlation was observed between the structural appearance of the mitochondria and the secretion of phenol red, there being an inverse ratio between the amount of mitochondrial alterations and the amount of phenol red secreted.

A sequence of functional and structural alterations of both the glomeruli and the tubules was observed which suggested that the action of the toxin on the kidneys may be the result of (1) the circulatory alterations, (2) the direct action of the toxin or toxic products on the cells or (3) a combination of these factors.

The application of a plaster cast following intramuscular injection of *Cl. welchii* toxin, by limiting the local formation of edema and possibly by diminishing the diffusion of the toxin, significantly reduced the hemoconcentration, maintained the urinary output, diminished the vasospastic phenomena of the glomerular and cortical capillaries and delayed the appearance of, and possibly modified some of, the tubular alterations of the kidney.

Increasing the rate of diffusion of the toxin by massage after intramuscular injection resulted in the following changes: increased hemolysis, earlier appearance of abnormal urinary constituents, alteration of the pattern of development of intracellular alterations in the tubules, as well as more diffuse and severe alterations, and more severe and extensive destruction of the kidneys.

Verge, J. (1951). Toxi-infections animales et alimentation. Le botulisme. **[Botulism in livestock.]** — *Rec. Méd. Vét.* **127,** 767-828. **2417**

An account of botulism:—definition of the disease, synonyms, history, bacteriology, species affected, epidemiology, geographical distribution, symptomatology in different species, lesions, diagnosis, aetiology, experimental studies, pathogenesis, medical and sanitary prophylaxis, treatment and inspection of meat.

—Charlotte M. Wood.

Sterne, M. & Wentzel, L. M. (1952). **Botulism in animals in South Africa.**—*Rep. XIVth Int. vet. Congr.* **3,** 329-311. [French and German summaries. Abst. from authors' summary.] **2418**

Botulism in South Africa is responsible for the death of tens of thousands of cattle annually. The relation of botulism to aphosphorosis was briefly reviewed.

The authors discussed the types of *Clostridium botulinum* responsible for botulism in South Africa. They described the type of vaccine effective against botulism in South Africa.

Gorham, J. R. (1950). **Botulism in mink.**—*Amer. Fur Breed.* **22,** 9 & 34. **2419**

Botulism is responsible for explosive and

crippling outbreaks of disease on individual mink farms, although it is not a major source of loss to the industry as a whole.

The outbreaks can usually be traced to the feeding of meat from an infected carcass. Within 18–96 hours a few mink will have been found dead and others paralysed. The first symptoms include muscular incoordination and stiffness, followed by paralysis of the hind legs. More rarely, the front legs are affected first. Respiratory symptoms then set in, and the front legs and the neck become paralysed. The mink is unable to move if placed upon its back, and hangs limply if picked up and held over the palm of the hand. There is often marked salivation. The eyes remain bright, but there is sometimes paralysis of the nictitating membane. Death is commonly preceded by a short period of coma. There is little of significance to be seen on P.M. examination.

When diagnosis of the condition has been made, all surviving animals on the affected ranch should be given a dose of from 4–8 ml. of polyvalent *Cl. botulinum* antitoxin. Experiments conducted at the Fur Animal Disease Research Laboratory of the U.S. Department of Agriculture have shown that mink are susceptible to the toxins of *Clostridium botulinum* Types A, B and C. The mink is much more susceptible than the fox, particularly to the toxin of type C.

—ALASTAIR N. WORDEN.

NOORDIJK, E. (1949). Rotkreupel bij schapen op het eiland Texel. **[Contagious foot rot in sheep on the island of Texel, Holland.]**—*Tijdschr. Diergeneesk.* **74,** 517-523. **2420**

Foot rot in sheep is prevalent on the sheep breeding island of Texel. The contagion is spread by trade. An account is given of the conditions on the island with emphasis on the need to avoid muddy conditions.

—C. A. VAN DORSSEN.

SALVIN, S. B., CORY, J. C. & BERG, M. K. (1952). **The enchancement of the virulence of *Candida albicans* in mice.**—*J. infect. Dis.* **90,** 177-182. [Authors' summary copied *verbatim.*] **2421**

In a series of experiments over a six-month period, 24 to 100% of white Swiss mice died within 30 days after being injected intraperitoneally with doses of $1{\cdot}25 \times 10^6$ to 22×10^6 yeast cells of *Candida albicans* when suspended in 2·5% mucin. No mice died when inoculated with similar numbers of cells in saline.

Twenty-one-day-old mice were the most susceptible of the six age groups tested (three to 13 weeks).

There was no marked difference in susceptibility between male and female mice of sixty days' age after intraperitoneal infection with the organism in mucin.

Of four infection routes studied, the intracerebral one produced the most fatalities, and the subcutaneous route the least fatalities. Inoculation by the intraperitoneal or intracardial routes was intermediate in its effect.

Four isolates showed distinct differences in their virulence in 60-day-old mice.

TUCKER, H. A., MATHENEY, R. G. & PORTER, D. B. (1951). **Histoplasmin sensitivity among cattle in Panama: report of 691 negative tests.**—*Amer. J. trop. Med.* **31,** 761-765. [Authors' summary copied *verbatim.*] **2422**

No reactors to histoplasmin, in dilutions as low as 1:5, were seen among 691 dairy cattle drawn from widely scattered areas of the Republic of Panamá. No correlation between bovine and human sensitivities was apparent, thus suggesting that cattle and man are not sensitized by the same outside source. It was concluded that cattle, at least in this region, do not constitute an important animal reservoir for *Histoplasma capsulatum.*

VERGE, J. (1951). Les maladies communes à l'homme et aux animaux. L'histoplasmose. **[*Histoplasma capsulatum* infection in man and animals.]**—*Encyclopéd. vét. périod.* Nos. 5-6. pp. 195-201. **2423**

A review of *H. capsulatum* infection particularly in man and in dogs. It occurs in cats, rodents and in foals. Dogs and rodents are reservoirs for the disease in man.—

—JAS G. O'SULLIVAN.

MARCATO, A. (1947). Le localizzazioni interne del farcino criptococcico. **[The incidence of *Histoplasma farciminosum* in the internal organs.]**—*Nuova Vet.* **23,** 68-77. **2424**

In horses affected with epizootic lymphangitis, lesions, besides being present in lymph nodes draining affected cutaneous areas, are present in the liver, spleen, lungs and pleura. M. suggested that infection may occur *via* the intestine and may be dispersed by the blood stream.—B. BALDELLI.

FAVA, A. & ZANACCA, G. (1951). Rara forma cistica di actinomicosi cardiaca in un bovino. **[Cardiac actinomycosis in a cow.]**—*Zooprofilassi.* **6,** 55-66. [French and German summaries.] **2425**

The authors described the lesions of cardiac actinomycosis in a cow slaughtered for food.—B. BALDELLI.

McGaughey, C. A. (1952). **Actinomycosis in carnivores: A review of the literature.**—*Brit. vet. J.* **108,** 89-92. 2426

In this useful review the literature on 'actinomycosis' in cats and dogs is concisely summarized . Clinical characters are indicated and various therapeutic measures noted.

[The value of the review would have been enhanced by distinguishing more clearly between diseases caused by aerobic and by anaerobic actinomycetes. It is now customary to reserve the term 'actinomycosis' for disease caused by anaerobic forms such as *Actinomyces israeli* (the only organism specified in the review, but referred to by the now obsolete name *Streptothrix israeli*). Diseases caused by aerobic forms, such as *Nocardia asteroides* which was isolated from one of Ginsberg and Little's cases in dogs, are more accurately designated as nocardioses.]
—G. C. Ainsworth.

Miller, N. G. & Drake, C. H. (1951). **Experimental actinomycosis.** — *Mycopath. & Mycol. Applic.* **6,** 28-37. [In English. German summary. Authors' summary modified.] 2427

A filamentous organism (M strain) isolated from the scrapings of the teeth from the normal human mouth was identified as *Actinomyces bovis* by comparing it with a known organism (E strain) on the basis of morphology, cultural requirements and antigenic relationships. Colony characteristics of both organisms on solid media were very similar. Gram stains as a rule showed no differences in the morphology of the organisms especially after repeated subculturing. Some differences in colony appearances were noted in Difco thioglycollate fluid and brain-heart infusion broth media. The cultural requirements of both organisms were identical.

There was antigenic similarity between the two organisms. No antigenic specificity was observed in the case of the M strain antigen in its relationship to the E strain antigen as determined by cross absorption tests. Both the M and E strains were relatively non-pathogenic.

Priestley, F. W. (1951). **A slide flocculation test for the diagnosis of contagious bovine pleuro-pneumonia.** — *Vet. Rec.* **63,** 427-429. 2428

P. described a simple slide flocculation test for the diagnosis of bovine contagious pleuro-pneumonia. Of 546 sera positive to this test 129 were negative to the complement-fixation test, while of 430 sera positive to the complement-fixation test, only 13 were negative to the flocculation test. The flocculation test was more sensitive, partly because vaccinated animals reacted to the flocculation test before they fixed complement; artificially infected animals behaved similarly; it was considered probable that the same thing happens with naturally infected animals.—Clive Briggs.

Sijpesteijn, A. K. (1951). **On *Ruminococcus flavefaciens*, a cellulose-decomposing bacterium from the rumen of sheep and cattle.**—*J. gen. Microbiol.* **5,** 869-879. [Author's summary copied *verbatim*.] 2429

Two strains of *Ruminococcus flavefaciens*, an important cellulose-decomposing bacterium, were isolated, one from the rumen of a sheep, the other from the rumen of a cow. Pure cultures were obtained by using the dilution method in agar media containing a strip of filter-paper. These strictly anaerobic, Gram-positive streptococci attack cellulose and cellobiose, but not starch, maltose, lactose or xylose. Only one strain could use glucose. Colonies on cellulose media were characterized by the formation of a yellow pigment; in cellobiose media the colonies were white. Growth on cellulose was favoured by addition of *Clostridium sporogenes* or a certain amount of sterilized medium in which *Cl. sporogenes* had previously grown.

Estimations of the end-products of fermentation of cellulose and cellobiose showed that at least 25% of the carbon could be recovered as succinic acid, *circa* 23% as acetic acid and *circa* 10% as formic acid; ethanol was absent and gas formation very limited. A description of the genus and the species is given.

Knöll, H. & Zapf, K. (1951). Untersuchungen zum Problem des Bakterienzellkerns. I. **[Studies on the bacterial cell nucleus.]**—*Zbl. Bakt. I. (Orig.)* **157,** 389-406. [English, French and Russian summaries. Abst. from English summary.] 2430

An account of systematic studies on the problem of the bacterial cell nucleus in Gram-negative bacteria, performed by the phase contrast method and several specific staining methods (Feulgen nuclear reaction, Robinow's technique, perchloric acid—fuchsine staining). The growth and increase in number of bacterial cells as observed in the phase contrast microscope reveals a rhythmical separation into bright and dark zones, the former being related to nuclear-elements and the latter to cytoplasm.

Leali, L. (1950). Ricerche sull'azione battericida dei raggi ultravioletti su alcuni schizomiceti patogeni. **[Bactericidal action of ultra-violet light.]**—*Atti Soc. ital. Sci. vet.* **4,** 272-280. [English and French summaries.] 2431

Erysipelothrix rhusiopathiae proved to be the most sensitve, and *Bact. coli* and *B. anthracis* spores the most resistant, to the action of ultra-violet rays. The presence of fluids or of opaque media prevented this bactericidal effect.
—G. P. MARSHALL.

FRAM, H., PROCTOR, B. E. & DUNN, C. G. (1950). **Effects of X-rays produced at 50 kilovolts on different species of bacteria.**—*J. Bact.* **60,** 263-267. [Authors' summary modified.] **2432**

The effects of irradiation with X-rays produced at 50 kV were studied with six bacteria, namely, *Bacterium coli, Bact. aerogenes, Staphylococcus aureus, Chromobacterium prodigiosum, Pseudomonas pyocyanea, and Pseudomonas fluorescens.*

The rate of destruction followed a first-order reaction. The "37 per cent dose" for each species of bacteria was calculated. *Staph. aureus* was found to be the most resistant to X-rays of those studied.

The percentage of bacteria of a given species killed by a specific total dosage of X-rays was the same regardless of the initial concentration of bacteria in the suspension irradiated. These results indicate that the bacteria were destroyed by soft X-rays according to the "direct hit" theory of radiation.

See also absts. **2619** (sensitivity of bacteria to antibiotics); **2642** (*Salmonella* in eggs); **2643** (bacterial flora of frozen eggs); **2679** (Colonial Research report); **2680** (report, Canada); **2681-2682** (reports, Australia); **2683** (report, Hong Kong); **2684-2685** (reports, Jamaica); **2688** (report, Tanganyika); **2690-2691** (reports, Eire); **2692** (report, U.S.A.).

DISEASES CAUSED BY PROTOZOAN PARASITES

KALUSCH, A. (1951). Die Bekämpfung der Beschälseuche in Österreich in den Jahren 1946 bis 1950. **[Control of *Trypanosoma equiperdum* infection in Austria during 1946-50.]**—*Wien. tierärztl. Mschr.* **38,** 375-381. [English, French and Italian summaries.] **2433**

Dourine first occurred in Austria in 1946; it became widespread, but was stamped out by 1950. Data were recorded concerning 579 infected horses. Good results followed administration of neosalvarsan (neoarsphenamine) and mapharsen [a derivative of trivalent arsenic —Ed. *V.B.*]—M. L. CLARKE.

HELM, R. (1951). Die Dourine-Infektion des Meerschweinchens. **[*Trypanosoma equiperdum* infection in g. pigs.]**—*Berl. Münch. tierärztl. Wschr.* No. 4. pp. 71-75. **2434**

T. equiperdum infection in g. pigs is always fatal. There is neither prenatal infection nor any congenital immunity. The results of infection by nine different routes were given.
—M. L. CLARKE.

MORNET, P., LALANNE, A. & CISSOKO, M. (1951). Essai de trypano-prévention chimiothérapique des troupeaux bovins d'exportation. **[Prophylaxis of trypanosomiasis in cattle by chemotherapeutic agents.]**—*Bull. Serv. Élev. Industr. anim. A.O.F.* **4,** Nos. 2-3, pp. 7-16. **2435**

Two hundred Zebu cattle were insignificantly affected with trypanosomiasis on setting out on their way to the coast. On arrival 70% were affected. The authors recommend prophylactic treatment with antrycide before animals start on such journeys.
—JAS. G. O'SULLIVAN.

ANON. (1951). **Belgian Congo, Leopoldville. International Scientific Committee for Trypanosomiasis Research. Appendix I. Report of the Sub-Committee appointed to report upon the treatment and prophylaxis of animal trypanosomiasis with antrycide and dimidium bromide.** — *Bur. interafr. Tsetse Tryp.* [B.P.I.T.T. No. 151/T.] pp. 5. **2436**

Comparison between antrycide and dimidium bromide as curative and prophylactic agents is made for the following points:— cost, dosage, mode of administration, reaction, toxicity, effectiveness against *Trypanosoma congolense, T. vivax* and other species of trypanosomes.—CHARLOTTE M. WOOD.

ANON. (1951). **Belgian Congo, Leopoldville. Final Report of International Scientific Committee for Trypanosomiasis Research. Third session held at Bobo-Dioulasso, Haute-Volta, 11th. to 16th. June, 1951.**—*Bur. interafr. Tsetse Tryp.* [B.P.I.T.T. No. 150/T.] pp. 7. **2437**

The report covers accounts of the work done in the fields of (1) bovine trypanosomiasis including cryptic infections, immunology, chemotherapy, chemoprophylaxis and new phenanthridinium compounds; (2) entomology general, ecology and control; (3) human trypanosomiasis, pathology, chemotherapy by mel B [melarsen oxide + B.A.L.] and related compounds, pentamidine and lomidine and chemoprophylaxis by the diamidines.—CHARLOTTE M. WOOD.

WERNER, H. (1949). Brandmäuse und andere Wildmausarten als geeignete Dauerträger von Trypanosomen. **[Field mice and other kinds of wild mice as suitable permanent carriers of trypanosomes.]**—*Zbl. Bakt. (Orig.)* **154,**

68-75. [English, French and Russian summaries.] 2438

W. found that long-and short-tailed field mice infected with *T. equiperdum* usually die, unlike white mice, but not for 4–6 and 2–4 months respectively.—M. L. CLARKE.

LHOVEROL, H. & YOUSOUFF, S. (1948). Évolution de *Trypanosoma suis* chez l'hôte vertébré. [**Evolution of *T. suis* in the vertebrate host.**] —*Rev. Élev. Méd. vét. Pays trop.* **2**, 44-47. 2439

At P.M. examination of a pig, numerous leishmanial forms were found in the heart-blood and myocardium. The authors consider that they represented a resistant form of the parasite.
—JAS. G. O'SULLIVAN.

ELKELES, G. (1951). **On the life cycle of *Trypanosoma cruzi*.**—*J. Parasit.* **37**, 379-386. 2440

A restatement of E.'s theory that the trypanosomal stage develops directly from leishmania forms *in vivo* and *in vitro*.
—JAS. G. O'SULLIVAN.

MONNET, A. & BAYLET, R. (1951). Contribution à l'étude des constituants biologiques du sang chez les malades trypanosomés: la cholesterinémie chez le trypanosomé. [**Cholesterinaemia in trypanosomiasis.**]—*Bull. Soc. Path. exot.* **44**, 786-793. 2441

The level of cholesterol was reduced in the blood of human beings especially at the beginning of trypanosomiasis but when the patients were treated the blood level returned to normal.
—JAS. G. O'SULLIVAN.

BAREGGI, G. (1950). Patogenesi della tricomoniasi del toro con particolare riguardo alla morfologia del parassita rilevato in sede testicolare. [**Trichomoniasis in bulls and morphology of the parasite in the testicle.**]—*Atti Soc. ital. Sci. vet.* **4**, 340-352. [English and French summaries.] 2442

In the testicles of a young bull affected by temporary frigidity, B. demonstrated chronic brucellar lesions, and the presence of numerous trichomonads.

The protozoa found in the testicles differed from those usually found in the female genital organs, having double the number of flagella (six instead of three) with circling rather than propelling movements, and on the slide they usually appeared in clumps. This double infection, frequently found in bulls, suggested that a previous brucellar localization may facilitate the development of trichomoniasis, or, at any rate, create optimal conditions.—M. BERTANI.

HESS, E. (1951). Diagnose und Therapie der Trichomonadenseuche beim Zuchtstier. [**Diagnosis and treatment of trichomoniasis in bulls.**]—*Tierärztl. Umsch.* **6**, 191-196. 2443

Of 5,979 cases of abortion (infectious) 478 were caused by *Trichomonas foetus*. H. described his technique for the collection and use of material for diagnosis and for treatment, which is based on the oxygen sensitiveness of the parasite.—M. L. CLARKE.

LITTLE, E. W. (1951). **Surgical demonstrations. Quarterly general meeting, V.M.A.I., May 1st, 1951. 3. Hess treatment for trichomoniasis in bulls.**—*Irish vet. J.* **5**, 154-157. 2444

L. injected into the prepuce two gal. of H_2O_2 of varying strengths which contained 0·1–0·15% of a wetting agent, cetavalon [cetyltrimethylammonium bromide]. Three treatments with a 10-volume solution H_2O_2 [3% solution] at weekly intervals cured the bulls, upwards of 60 being treated. Details of the injection apparatus were given.
—JAS. G. O'SULLIVAN.

HOLZ, J. (1951). Zur Klärung des Cyklus der Trichomonas fetus. [**The life cycle of *Trichomonas foetus*.**]—*Tierärztl. Umsch.* **6**, 118-121. 2445

Firstly cyst formation, secondly, division and separation of resultant encysted forms and, thirdly, disintegration into numerous granules, are described as developmental stages of *Tr. foetus*.—M. L. CLARKE.

SUZUOKI-ZIRÔ & SUZUOKI-TUNEKO. (1951). **Hydrogen evolution by *Trichomonas foetus*.** [Correspondence.] — *Nature, Lond.* **168**, 610. 2446

Tr. foetus grown anaerobically produce 9–11 ml. of hydrogen per 50 ml. culture medium. The hydrogen evolution depended on the amount of glucose present.
—JAS. G. O'SULLIVAN.

CARMICHAEL, J. & MACLAY, M. (1952). **The treatment of blackhead in turkeys with entramin.**—*Vet. Rec.* **64**, 54. [Authors' summary copied *verbatim*.] 2447

Two accounts of the field use of entramin [contains 22·5% 2-amino-5-nitro-thiazole] in blackhead in turkeys are given: one under laboratory supervision in 10 severe cases and the second under ordinary farm routine. The drug 2-amino-5-nitrothiazole is a most efficacious agent for this infection and no relapses occurred on highly infective ground.

ZAIN, H. (1944). Malariaimmunität und Rezidiventstehung unter Berücksichtigung der Endothelstadien (*Plasmodium gallinaceum*).

[**Immunity and relapse in** *Pl. gallinaceum* **infection.**]—*Z. Tropen. Parasitol.* **48,** 156-168. **2448**

Z. found that repeated intravenous superinfection of fowls with a latent *Pl. gallinaceum* infection led to antibody formation. The effect of splenectomy and manganese chloride administration on the formation of exo-erythrocytic forms, chiefly in the reticulo-endothelial system, was studied.—M. L. CLARKE.

ANON, (1951). **Notes on animal diseases. II. East Coast fever and related diseases.**—*E. Afr. agric. J.* **17,** 65-68. **2449**

Cattle infected with East Coast fever may relapse to redwater and in such cases the symptoms of the latter disease are superimposed on those of the former. Mortality in adult cattle introduced from clean to highly infected areas may reach 95%, but when outbreaks occur in "clean areas" a high percentage of recoveries is sometimes reported.

Amongst other post mortem lesions, the abomasum is often congested and discrete ulcers —usually black in colour and angular in shape— may be present.

In certain areas in cattle immune to East Coast fever, parasites indistinguishable from "Koch's blue bodies" are occasionally found in the brain. This is found only in areas where East Coast fever infection is very heavy. All attempts to set up the disease experimentally have failed. It is not known if the parasite in the brain is identical with that of E.C.F. or whether it is a closely related species. No method of treatment is known.—D. S. RABAGLIATI.

GARNHAM, P. C. C. (1951). **A new piroplasm from the rock hyrax.**—*J. Parasit.* **37,** 528-532. [Author's summary copied *verbatim.*] **2450**

A new piroplasm—*Echinozoon hoogstraali* n. gen., n. sp., is described from the hyrax *Heterohyrax syriacus.* The organism is accompanied by remarkable filaments surrounding the infected erythrocyte.

FANKHAUSER, R. (1951). Zwei neue Fälle von Toxoplasmose beim Hund. [**Two cases of toxoplasmosis in dogs.**]—*Schweiz. Arch. Tierheilk.* **93,** 12-22. [English, French and Italian summaries.] **2451**

A description of two further cases of canine toxoplasmosis in Switzerland with the usual symptoms and lesions. Transmission tests on white mice were unsuccessful, probably owing to delay in testing.—I. W. JENNINGS.

SHORTT, H. E. (1951). **The impact of protozoa on world economic problems.**—*Brit. med. J.* Nov. 10th, 1103-1110. **2452**

Three main groups of protozoa were discussed; (a) trypanosomes, mainly those affecting cattle which, as important food animals, have a considerable indirect effect on man; (b) malaria parasites, which exert a direct influence on man; (c) piroplasms, including only East Coast fever, again having an indirect impact on human economy. S. discussed control and the ecological factors involved in any scheme of complete eradication.—M. L. CLARKE.

See also absts. **2537** (tsetse flies); **2680** (report, Canada); **2681-2682** (reports, Australia); **2684** (report, Jamaica); **2688** (report, Tanganyika); **2689** (report, Uganda); **2692** (report, U.S.A.); **2695** (book, protozoology).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

PLACIDI, L. & SANTUCCI, J. (1951). Sur la réceptivité du boeuf marocain autochtone au virus aphteux. [**Susceptibility of Moroccan cattle to foot and mouth disease.**]—*C.R. Soc. Biol., Paris.* **145,** 1003-1005. **2453**

A standard O virus was used on indigenous cattle using normal laboratory procedure. Lesions were obtained, but of such a benign nature as to be of no value in virus production.

—G. V. LAUGIER.

SCHANG, P. J. & ARAMENDI, M. C. (1949). Obtencion de suero antiaftoso de alto titulo en equinos, conejos y cobayos. [**Preparation of foot and mouth disease antiserum in horses, rabbits and g. pigs.**]—*Gac. vet., B. Aires.* **11,** 211-221. **2454**

The paper consists largely of protocols illustrating the protective power in g. pigs of antiserum obtained by immunizing horses, rabbits or g. pigs by intravenous injection of virus. No precise information was given about the actual potency of the antiserum.

—J. EDWARDS.

SEGRE, D. (1950). Ricerche sull'azione di alcune proteine seriche nel trattamento degli animali aftosi. [**Serum proteins in the treatment of foot and mouth disease.**]—*Atti Soc. ital. Sci. vet.* **4,** 251-261. [English and French summaries.] **2455**

Serum proteins associated with arsenoiodophenol reduced mortality caused by F. & M. disease in experimentally infected puppies less than one month old and prolonged the incubation period in g. pigs. The action is probably non-specific as the protein fraction has the same result as the untreated serum protein.

—F. R. HARRIS.

SKINNER, H. H. (1951). **Propagation of strains of foot-and-mouth disease virus in unweaned white mice.**—*Proc. roy. Soc. Med.* **44**, 1041-1044. **2456**

The technique used for the successful propagation of six strains of virus in unweaned mice was described. Six strains of virus were passaged in unweaned mice 7–10 days old. Paralysis of the muscles of the hindquarters and respiratory distress were produced. On P.M. examination degeneration of the muscle fibres was observed in the skeletal and heart muscles. A comparsion was made with other species of animals in which heart lesions occur in F. & M. disease and with other viruses such as the Coxsackie viruses which cause similar lesions in mice. The applications of these findings to virus titration and serum neutralization were discussed.—G. V. LAUGIER.

THOMAS, J. A., THIÈRY, J.-P. (JEAN-PIERRE), SALOMON, L. (LOUIS), SALOMON, L. (LÉONE) & THIÈRY, J.-P. (JEAN-PAUL). (1951). La culture massive du virus de la fièvre aphteuse sur peau de foetus en liquide amniotique déproteiné et purifié. **[Cultivation of foot and mouth disease virus on foetal skin in purified deproteinized amniotic fluid.]**—*C.R. Acad. Sci., Paris.* **233**, 506-508. **2457**

The technique employed in the culture of F. & M. disease virus on foetal skin in a medium of purified deproteinized amniotic fluid is described in detail; 500 ml. of culture yielded 50 g. of virulent material in two days.

—G. V. LAUGIER.

MICHELSEN, E. & BACHRACH, H. L. (1950). **The inability of bovine antisera to specifically inhibit the hemagglutination produced by foot. and-mouth disease virus preparations.**—*Nord. Vet.-Med.* **2**, 825-832. [In English. German summary.] **2458**

The object of this research is to develop a practical haemagglutination inhibition reaction. Extensive research showed that there were no significant differences in H.I. activities of normal, immune and hyperimmune bovine sera.

—G. V. LAUGIER.

PALACIOS, P. & RODRIGUEZ, R. (1949). L'épreuve de déviation du complément dans l'étude des virus aphteux. **[The complement fixation test in foot and mouth disease.]**—*Bull. Off. internat. Epiz.* **31**, 75-84. **2459**

The authors developed their technique independently of the work of Traub and Möhlmann (1943) whose papers were not available in Chile until after the war. They have been especially interested in the purification of antigens. Dialysis against running water, followed by freezing and thawing and removal of the precipitate which formed, was found to remove anticomplementary properties. This process was discarded in favour of the less time-consuming treatment with ether, overnight at room temperature. The ether is separated off and the last traces are removed *in vacuo*. An alternative treatment is the addition of 10% supercel [kieselguhr—Ed. *V.B.*] to the antigen, and its removal, after several minutes' shaking, by centrifugation.

The authors have used an inhibition test for the detection of antibody in bovine serum, but for routine purposes convalescent g. pig sera are used. Hyperimmunization is not practised. Fixation is carried out at room temperature for one hour, followed by keeping overnight at −5 to −10°C. The test is then thawed at room temperature. Two hours later the haemolytic system is added. Two units of complement are used, on the basis of a 100% haemolytic unit. Of 54 strains typed from field outbreaks, the authors recovered 27 of Vallee O type, 14 of Vallee A type and 13 of Waldmann C type. Six strains were mixed. In making vaccine, complement fixation is employed as a routine, only samples of epithelium having a titre of 1:160 or more in the test being used.

—J. B. BROOKSBY.

ROTTGARDT, A. A. & CHARLES, E. G. (1950). Preparacion de los distintos reactivos para la tipificacion por fijacion del complemento del virus de la fiebre aftosa. **[Reagents for the complement-fixation test in foot and mouth disease.]**—*Rev. med. vet. Parasit., Caracas.* **9**, 29-40. **2460**

A detailed description of the methods employed by these authors in the Instituto Nacional de la Fiebre Aftosa, Buenos Aires. It follows closely the description by Traub & Möhlmann [*V.B.* **14**, 1473].—J. B. BROOKSBY.

HOBOHM, K. O., PETERMANN, H. G. & FORREST, G. E. (1951). Tecnica de la elucion y demostracion del antigeno fijador del complemento en las vacunas antiaftosas adsorbidas. **[Elution and demonstration of the complement-fixing antigen in adsorbed foot and mouth disease vaccines.]**—*Gac. vet., B. Aires.* **13**, 163-177. [English and German summaries.] **2461**

The authors have devised a qualitative chemical method of preparing antigen for the complement-fixation test for the demonstration of the types of F. & M. disease virus present in

adsorbed vaccines. This should form a useful supplement to the usual animal tests.

—I. W. JENNINGS.

MOOSBRUGGER, G. A. (1949). Quelques observations dans l'étude des qualités immunisantes de diverses souches et leur intérêt par rapport à la standardisation du vaccin. **[Dosage and immunizing properties of different strains of foot and mouth disease.]**—*Bull. Off. internat. Epiz.* **31**, 98-106. **2462**

In this review, M. summarized his views on cross-immunity between strains and immunological types of the virus. He considers, for animals immune as a result of natural infection, that (1) immunity to one type may confer immunity to another, (2) immunity to one strain does not confer complete immunity to all strains of that type and (3) infection with a multiplicity of strains results in a strong immunity to a wider variety of strains than those included in the original infecting group. Complex strains with two or more type antigens are believed by M. to be important in natural outbreaks.

In regard to vaccination, he considers that a mechanism such as is suggested in (3) above makes it unnecessary to use autogenous vaccines. Instances were given of the efficacious use of stock vaccines in the field, against strains which broke the immunity of vaccinated animals under laboratory conditions. It was even suggested that the freedom of Switzerland from spread of infection from the predominantly C type epizootics in Italy was due to the widespread use of OA bivalent vaccines in the former country. M. gave examples of mixed strains with which he had worked and discussed the possible use of such strains in elaborating vaccines to protect against as many individual strains as possible.—J. B. BROOKSBY.

BELIN, C. & GALEA, M. (1951). Contrôle expérimental comparatif de la valeur immunisante des vaccins antiaphteux Belin et Schmidt-Waldmann. **[Experimental comparison of the value of the Belin and Schmidt-Waldmann foot and mouth disease vaccines.]**—*Bull. Acad. vét. Fr.* **24**, 445-448. **2463**

Comparative tests with Schmidt-Waldmann and Belin F. & M. disease vaccines using test doses of O Pontoise virus larger than the normal classical doses revealed immunological properties of equal strength and efficacy.

—G. V. LAUGIER.

SCHNEIDER, B. & BÜRGER, A.-L. (1951). Über das serologische Verhalten des Maul- und Klauenseuche-Hühnereivirus und seine Verwendung in Form der Adsorbatvakzine zur Immunisierung von Rindern. **[Foot and mouth disease virus passaged in chick embryos, its serological behaviour and its use in adsorbate vaccine.]**—*Mh. prakt. Tierheilk.* **3**, 35-40. **2464**

In continuation of earlier work the authors reported 268 successful passages of type O virus in fowl embryos. When tested around the 200th passage with hyperimmune g. pig serum, the virus proved to have retained its original type specificity and at this stage it had a titre of 10^{-5}.

An adsorbate vaccine was prepared and tested for immunizing power in cattle. A complete immunity against massive experimental infection was conferred by two doses of vaccine given at an interval of 14 days. A single dose conferred less than complete immunity, yet was sufficient to prevent anything beyond a local reaction. [This work on cattle was done with only a few animals.]—J. EDWARDS.

MICHELSEN, E. (1951). Expériences et recherches pour la mise en lumière des effets antigène et pathogène possibles de vaccins antiaphteux vieux. **[Antigenic and possible pathogenic effects of old foot and mouth disease vaccines.]**—*Acta path. microbiol. scand.* **29**, 307-313. [In French.] **2465**

Pathogenic effects have been observed in cases where old and outdated vaccines have been used. Outbreaks of disease usually occurred 2–8 weeks after vaccination.—G. V. LAUGIER.

GALEA, M. (1951). Sur le mécanisme de l'immunité anti-aphteuse active du cobaye. **[Mechanism of active immunity against foot and mouth disease in the g. pig.]**—*C.R. Soc. Biol., Paris.* **145**, 964-965. **2466**

It was shown that g. pigs develop a solid local immunity at the site of inoculation following the intradermal injection of F. & M. disease virus.—G. V. LAUGIER.

BLOOD, B. D. & RODRÍGUEZ, R. (1951). Centro Panamericano de fiebre aftosa. **[Pan-American foot and mouth disease centre.]**—*Bol. Ofic. sanit. pan-amer.* **31**, 559-562. **2467**

The authors described the facilities already in existence at the Panamerican Centre for Foot and Mouth Disease which is being established at São Bento (near Rio de Janeiro), Brazil, and the projects for future buildings and installations which are to include suitable isolation stabling for 200 head of cattle for laboratory study. They discussed the main functions of the Centre—diagnostic service, practical consultation, education and laboratory investigation—it will not be a production centre for vaccine.—F.E.W.

DUCKWORTH, C. V. (1951). Cooperación internacional en vasta escala. Una realidad demostrada en el control de la fiebre aftosa. [**Value of large-scale international co-operation in the control of foot and mouth disease.**] —*Bol. Ofic. sanit. pan-amer.* **31**, 244-247. 2468

The need for international co-operation in the control of disease was discussed and details were given of the value of such large-scale co-operation in the control of the 1946 outbreak of F. & M. disease in Mexico.—F.E.W.

GORDON, W. A. M. & LUKE, D. (1952). **Aujeszky's disease in pigs in Northern Ireland.**—*Vet. Res.* **64**, 81-82. 2469

An account of three outbreaks on widely scattered farms, drawing attention to the varied symptoms which may be associated with Aujeszky's disease in the pig, and to the inability of freshly isolated virus to produce the typical syndrome in rabbits.—J. T. DONE.

BROOKS, A. G., D'SILVA, C. B., LAHIRA, B. N. & AHUJA, M. L. (1950). **Studies on rabies.**—*Indian J. med. Res.* **38**, 119-123. 2470

The authors are sceptical of the claims made by many workers to have cultured the virus of rabies in association with tissue cells and doubt if true multiplication of this virus ever takes place in an artificial medium.

Veeraraghavan's claim [*V.B.* **19**, 948 and 1799-1800] that the virus of rabies could be grown in a cell-free medium could not be substantiated. The authors found that the Coonoor 'culture' vaccine as prepared by that author probably retains for some little time greatly attenuated but still living fixed virus. They consider that there is no multiplication of virus in the medium, and that the titres recorded by Veeraraghavan as evidence of multiplication are commonly obtained when rabies virus fixed in rabbits is passaged through sheep and then tested on g. pigs.—J. M. LAL.

PIÉDROLA GIL, G. & DE LA ROSA, M. L. (1951). Se resolverá el problema de la rabia? [**The problem of rabies.**]—*Med. col.* **17**, 451-472. 2471

A general discussion: no new material. —F.E.W.

TRAUB, F. B., FRIEDEMANN, U., BRASCH, A. & HUBER, W. (1951). **High intensity electrons as a tool for preparation of vaccines. I. Preparation of rabies vaccine.**—*J. Immunol.* **67**, 379-384. [Authors' summary copied *verbatim.*] 2472

A high degree of antigenicity is retained in rabies virus inactivated by high energy electrons. The vaccines thus prepared are bacteriologically sterile, superior to phenolized vaccines and compare well with vaccines prepared by ultraviolet inactivation. A fourfold increase in the irradiation dose does not lower the potency of the vaccine appreciably. The advantages of high energy electrons for the preparation of viral vaccines are discussed.

FINZI, G. (1951). Il problema della vaccinazione antirabica dei cani. [**Vaccination of dogs against rabies.**]—*Profilassi.* **24**, 65-67. 2473

F. criticized certain statements published by Flückiger [*Schweiz. Arch. Tierheilk.* **93**, 352-259] concerning the production of immunity against rabies in dogs.—M. BERTANI.

BRIODY, B. A. & STANNARD, C. (1951). **Studies on vaccinia virus. I. The development of hemagglutinating and infective particles in the chorioallantois of the chick embryo.**—*J. Immunol.* **67**, 403-411. [Authors' summary copied *verbatim.*] 2474

BRIODY, B. A., LEDINKO, N. & STANNARD, C. (1951). **Studies on vaccinia virus. II. Neutralization of vaccinia virus by normal guinea pig serum.**—*Ibid.* 413-422. [Authors' summary slightly modified.] 2475

I. The growth of four strains of vaccinia virus in the epithelial cells of the chorioallantois of the chick embryo was found to occur in a step-wise fashion. Immediately following the initiation of infection there was a sharp reduction in the amount of virus in the membrane, and no increase was detectable for approximately 8 hours. At this time virus could be released from the cells, and it did not increase further in concentration until 16 hours following the initiation of infection. After the completion of the second infectious cycle, virus was found in higher concentration in the chorioallantoic membrane. Vaccinia hemagglutinin was detected for the first time at about 16 hours following the inoculation of virus. At this time its presence was correlated with a second increase in viral concentration. It has been assumed that vaccinia hemagglutinin was released along with virus at 8 hours, but in such minute amounts that it could not be measured by the technics employed.

II. A labile principle capable of neutralizing the egg infectivity of vaccinia virus is present in normal g. pig serum. This "non-specific" inhibitor is inactive against vaccinia haemagglutinin. It can be stored at −60°C. with no loss of activity, but rapidly deteriorates when stored for a few hours at 4°C. It is inactivated by heating to 56°C. for 30 min. Removal of the haemolytic activity of comple-

ment from the g. pig serum does not appreciably reduce the activity of the viral inhibitor. A similar component capable of neutralizing vaccinia virus is not present in detectable amounts in the serum of mice. The pattern of infection following intranasal inoculation of vaccinia virus in the g. pig differs appreciably from that in the mouse.

VERLINDE, J. D. (1951). **An experimental study on problems of immunity and allergy in postvaccinal encephalitis.**—*Arch. ges. Virusforsch.* **4**, 460-475. [In English. Author's summary slightly modified.] **2476**

Fifty-four harvests of 7 different strains of vaccinia virus present in calf lymph used as smallpox vaccine have been examined for virulence, antigenicity, and resistance to neutralizing antibody, and the results were compared with those of a similar examination of smallpox vaccines that had initiated postvaccinal encephalitis. In 3 of 6 cases of postvaccinal encephalitis, the antibody level was poor and did not agree with the high antigenicity of the virus. In one case, a child that had been vaccinated with a vaccine of low antigenicity, vaccinia virus was recovered from the blood on the 15th day following vaccination. It is suggested that individual factors may inhibit the production of neutralizing antibody, and in animal experiments, guanidine appeared to exert such an inhibitory effect, although slight and transient. A considerably higher antibody level was obtained when rabbits and children were revaccinated on the 7th day following primary vaccination, but then the virus could be recovered from the blood from the second to the eighth day following revaccination, which proves that the virus is not rapidly inactivated in spite of the high antibody level. Immunization experiments with heat-inactivated neuro-vaccinia, even when incorporated in vaseline and lanolin, were unsuccessful, since the resistance to challenge with living neurovaccinia, particularly of the central nervous system, proved unsatisfactory, although antibodies had developed.

Softened foci of the brain and encephalitis could be produced by intracerebral inoculation of rabbits with mixtures of neurovaccinia, vaccinia immune serum and brain tissue, but no demyelination was observed. Bovine protein, vaccinia virus grown on the chorioallantoic membrane of the chick-embryo, and bacteriologically sterile calf lymph failed to produce demyelination after repeated injection into rabbits. Only in one rabbit that had been injected intracerebrally with calf lymph and that received two subsequent intramuscular injections with the same material, developed a demyelinating encephalopathy, which was not, however, identical with the demyelinating lesions in human beings suffering from postvaccinal encephalitis. It is suggested that the vaccinia virus may produce the inflammatory lesion in the wall of the blood vessels, but that the virus particle itself has no direct action on the myelin sheaths.

BONADUCE, A. (1950). Contributo alla conoscenza della latenza da infravirus vaioloso nei piccioni. **[The latency of pigeon pox virus.]**—*Zooprofilassi.* **5**, 321-324 & 327-329. [French summary.] **2477**

In two pigeons which had completely recovered from a mild infection induced by inoculation of pigeon pox virus, it is claimed that the virus could be reactivated by injection of brain emulsion from a horse which had died of meningo-encephalomyelitis.—M. BERTANI.

KILBOURNE, E. D. & HORSFALL, F. L., JR. (1951). **Mouse-egg neutralization. Neutralization in the mouse of influenza viruses not adapted to the mouse.**—*J. Immunol.* **67**, 431-436. [Authors' summary copied *verbatim.*] **2478**

A new procedure is described for the measurement of the concentration of neutralizing antibodies against influenza viruses which have not been adapted to the mouse. The method is dependent on the demonstration, by subinoculation of eggs, of un-neutralized virus in the lungs of mice inoculated intransally with virus-serum dilution mixtures. The appearance of hemagglutinating virus in eggs thus inoculated constitutes the serum titration endpoint.

The mouse-egg neutralization method obviates the adaptation of influenza viruses to mice, and permits the precise measurement of neutralizing antibody responses in patients against their own virus strains unaltered by murine passage.

SCHLESINGER, R. W. (1951). **Studies on interference between influenza and equine encephalomyelitis viruses.**—*Arch. ges. Virusforsch.* **4**, 501-517. [In English. Author's summary copied *verbatim.*] **2479**

A clue to the mechanism of interference between influenza and equine encephalomyelitis viruses was sought in the form of some cellular component which might be of significance in infection with both viruses. The substance investigated was a heat-stable receptor-like inhibitor of hemagglutination by Lee virus (VHI).

Infection with influenza viruses is associated

with progressive decrease in the amount of VHI extractable from mouse brain or from minced chorio-allantoic membrane of chick embryos in tissue culture. Equine encephalomyelitis virus exerts no detectable quantitative or qualitative change on the VHI either in vitro or in vivo, and it can multiply to full titer in tissue which has been depleted of all detectable VHI by the action of receptor-destroying enzymes of *V. cholerae*.

The interfering capacity of non-infectious viral hemagglutinin ("incomplete" influenza virus), obtained from mouse brain or from eggs inoculated serially with undiluted allantoic fluids, was compared with that of fully infectious "standard" virus. It was concluded that infectivity, i.e., ability of the virus to initiate an at least partial cycle of multiplication in mouse brain, was associated with interfering capacity, and that "incomplete" virus was inert.

Blanc, G., Bruneau, J., Delage, B. & Poitrot, R. (1951). Étude comparative de virus chorioméningite lymphocytaire d'origine humaine (W. E. Armstrong) et animale (pneumopathie du cobaye). [**Comparative study of the viruses of human and animal lymphocytic choriomeningitis.**]—*Bull. Acad. Nat. Méd.* **135**, 520-528. **2480**

The virus of human and of g. pig choriomeningitis produces a strong cutaneous reaction in man and iridocyclitis and keratitis in the rabbit.—W. R. Bett.

Lipari, M. (1951). **A milkborne poliomyelitis episode.**—*N.Y. St. J. Med.* **51**, 362-369. **2481**

An account is given of a sudden, circumscribed, non-seasonal epidemic of poliomyelitis, Oct.–Nov. 1949, in Delaware County, New York, in which milk and/or cream from a certain dairy was suspected as the medium of transmission.—W. R. Bett.

Casals, J. & Olitsky, P. K. (1951). **The adaptation of poliomyelitis virus, Lansing strain, to newborn mice and the use of their central nervous tissues for preparation of complement-fixing antigen.**—*Arch. ges. Virusforsch.* **4**, 452-459. [In English. Authors' summary slightly modified.] **2482**

The authors described a method by which the MEFl-Lansing type poliomyelitis virus was adapted to new-born mice which to a relative degree are naturally resistant to the virus. This adaptation was manifested by a shortening of the incubation period, uniform, regular and increased pathogenicity for mice, and an enhanced infectivity of the central nervous tissues of the reactors. With this adapted virus which has the aspects of an induced, adaptive variant, it is possible to prepare an antigen for complement fixation tests to detect poliomyelitis-virus infection. This test is specific and is applicable to the serum of several different species, including man, and may possibly reveal the existence of cross-reaction between two types of poliomyelitis virus, the Lansing and the Brunhilde. The range of its practical application to poliomyelitis problems still remains, however, for further study.

Gard, S. & Östlund, D. (1951). **A note on the hypothesis of intranuclear localization of viruses belonging to the poliomyelitis group.**—*Arch. ges. Virusforsch.* **4**, 442-451. [In English. Authors' summary slightly modified.] **2483**

In brains of mice infected with the FA strain of Theiler's virus, harvested at a time when definite symptoms appear, the virus seemed to be present in three different states:—(a) Free virus; (b) Adsorbed on insoluble tissue constituents; can be removed by exhaustive extraction with 0·85% saline, this fraction usually amounting to about 5% of the total; (c) Firmly bound; cannot be extracted with 0·85% saline; released by treatment with 8% sodium chloride solution or digestion with ficin, this fraction corresponding to 10 to 25% of the total virus content.

If normal mouse brains were homogenized in virus-containing extracts of infected brains, part of the virus was adsorbed and fixed to the sedimentable material in principally the same way as in infected brains.

On the basis of the evidence presented the hypothesis of intranuclear localization of virus is considered invalid. As a tentative explanation of the virus fixation a formation of virus-antibody complexes is assumed.

Dean, D. J. (1951). **Mouse encephalomyelitis. Immunologic studies of a non-infected colony.**—*J. Immunol.* **66**, 347-359. **2484**

The susceptibility of mice varies with the degree of passive maternal immunity, the age and previous infection.—K. G. Towers.

Findlay, G. M. & Howard, E. M. (1951). **The susceptibility of rats to encephalomyocarditis viruses.**—*Brit. J. exp. Path.* **32**, 569-572. [Authors' summary slightly modified.] **2485**

Unweaned rats and young rats up to the age of 22–25 days are highly susceptible to encephalomyocarditis viruses injected intraperitoneally or intracerebrally or instilled intranasally. Above the age of 25 days rats show no clinical symptoms of infection.

YAMASHITA, J. (1942). **Transmission of equine infectious anaemia by parasites. A review on the subject.**—*Bur. anim. Industr. Tokyo.* **1,** 99-112. **2486**

Y. concluded that the possibility of the transmission of equine infectious anaemia by blood-sucking insects must be acknowledged as confirmed, but at the present it was premature to determine whether this is the principal route of infection.—KOGI SAITO.

STECK, W. (1951). Untersuchungen über die Ursachen des regionalen Auftretens der Valléeschen Krankheit (infektiösen Anämie) der Pferde. **[Regional incidence of equine infectious anaemia.]**—*Schweiz. Arch. Tierheilk.* **93,** 313-319. [English, French and Italian summaries.] **2487**

In Switzerland there are definite areas in which the disease has occurred during a period of many years. Altitude, geology, agricultural methods, food and drinking water were found to be no different from those in districts free from infectious anaemia. Differences in climate are thought to be important.—ROY MACK.

LÜBKE, A. (1951). Zur Diagnose der infektiösen Anämie durch Untersuchung von Zitratblutproben. **[The citrate blood test for the diagnosis of equine infectious anaemia.]**—*Dtsch. tierärztl. Wschr.* **58,** 83-85. **2488**

Leucocyte count on citrate-blood samples is valueless in diagnosing equine infectious anaemia; the erythrocyte count is valid provided that several counts are made in a short space of time. Counts under 3·5 million erythocytes indicate infectious anaemia; slight anaemia 4·5–5·5 and moderate anaemia 3·5–4·5 million erythrocytes respectively are diagnosed by the additional aid of resistance-spread data. A case of chronic dourine disease was not distinguishable from infectious anaemia. The bilirubin test was more frequently positive in infectious anaemia, particularly when severe, than in secondary anaemia, but the test is not of much direct diagnostic value.—K. J. SINCLAIR.

BERTHELON, M. & TOURNUT, J. (1951). L'avortement par ultra-virus des équidés existe-t-il en France? **[Virus abortion of mares in France?]**—*Rev. Méd. vét. Lyon et Toulouse.* **102,** 593-600. **2489**

An investigation of the aetiology of an outbreak of abortion in mares is described. The author concluded that virus abortion was demonstrated for the first time in France.

—G. V. LAUGIER.

EDDIN BEY, S. (1951). **[Rinderpest in Alexandria, Egypt.]** [Correspondence.] — *Bull. Off. internat. Epiz.* **35,** 436. **2490**

An outbreak of rinderpest at the quarantine station in Alexandria is described. The disease spread to a neighbouring farm. Prophylactic measures taken are described.—G. V. LAUGIER.

SCOTT, G. R. (1952). **The intradermal inoculation of lapinised rinderpest vaccine.**—*Vet. Rec.* **64,** 137-139. [Author's summary copied *verbatim.*] **2491**

The intradermal inoculation of freeze-dried lapinised rinderpest virus protected susceptible cattle against challenge with virulent bovine rinderpest virus. The intradermal route resulted in a twentyfold reduction in the amount of virus required for successful immunisation. The practical utilisation of the intradermal route for protecting cattle against rinderpest is discussed.

PIERCY, S. E. (1952). **Studies in bovine malignant catarrh. I. Experimental infection in cattle.**—*Brit. vet. J.* **108,** 35-46. [Author's summary slightly modified.] **2492**

The passage of a virulent strain of virus of the "head and eye" form of bovine malignant catarrh, by gland to gland inoculations, through 19 generations of cattle, is described. Out of 41 animals used, all but one contracted malignant catarrh. Neither age nor breed appeared to qualify susceptibility. By the nineteenth passage no significant reduction of incubation period was evident. No cases of contact infection occurred, although susceptible cattle were at all times in close proximity to reacting animals. Attempts to filter the virus failed. Attention is drawn to certain clinical features and lesions peculiar to this series.

KURTZE, H. (1950). Übertragung des "Bösartigen Katarrhalfiebers des Rindes" auf ein Schwein. **[Infection of a pig with bovine malignant catarrh.]**—*Dtsch. tierärztl. Wschr.* **57,** 261. **2493**

K. presented the clinical features and lesions of a case of what was considered to be bovine malignant catarrh in a pig, caused by ingestion of contaminated swill.

—G. P. MARSHALL.

PASK, V. M., MACKERRAS, I. M., SUTHERLAND, A. K. & SIMMONS, G. C. (1951). **Transmission of contagious ecthyma from sheep to man.**—*Med. J. Aust.* Nov. 10th, 628-632. [Authors' summary copied *verbatim.*] **2494**

Twenty-three of 46 attempts to transmit contagious ovine ecthyma to 18 human beings by means of filtrates containing active virus

were successful. Of the lesions produced, nine were classified as mild or doubtful, 14 as severe.

The more severe lesions developed after an incubation period of four to six days, reached a maximum in seventeen to twenty-one days, and healed with separation of scab in twenty-two to twenty-eight days. There was no constitutional disturbance. Clinically and histologically they were broadly similar to experimental lesions on sheep.

Passage of virus back to sheep was successful in one out of seven mild infections and in 10 of 10 more severe infections tested. The highest titres of virus obtained from human lesions were between 10^{-4} and 10^{-6} from the twelfth to the fourteenth day after inoculation, and the detectable virus content decreased considerably as the lesions healed.

Infection appears to have been followed by a solid immunity in 11 or 12 subjects challenged. The twelfth had had very mild primary lesions and developed a severe infection following her second challenge inoculation.

The relation of this clinically rather distinctive infection to pustular dermatitis of shearers has still to be determined.

MONSUR, K. A. & BARWELL, C. F. (1951). **Observations on the antigenic relationship between the virus of enzootic abortion in ewes and viruses of the psittacosis-lymphogranuloma group.**—*Brit. J. exp. Path.* **32,** 414-421. [Authors' summary copied *verbatim.*] 2495

The virus of enzootic abortion in ewes has been studied in complement-fixation tests using as antigens, unheated and boiled virus suspensions. Sera against psittacosis and lymphogranuloma venereum viruses and similar preparations of these agents were used in cross-absorption experiments.

The sheep virus was found to possess the heat-stable group antigen common to the group as well as a heat-labile, specific component.

The antigenic behaviour and relationships of these viruses are discussed.

ANON. (1951). **Hog cholera control in Alabama.** —*Auburn. Vet.* **8,** 10-13. 2496

The State of Alabama is the first in the U.S.A. to pass a law which forbids the use of live hog cholera (swine fever) virus for the immunization of pigs. The importance of this enactment and the dangers of uncontrolled distribution of live virus are emphasized.

—D. LUKE.

VERGE. J., PILET, E., BÜCK, G. & QUESNEL, J.-J. (1951). Recherches expérimentales sur la maladie de Teschen (méningo-encéphalomyélite enzootique du porc). **[Studies of Teschen disease.]**—*Bull. Acad. vét. Fr.* **24,** 373-377. 2497

The authors confirmed that pigs weighing 8–10 kg. are most susceptible to experimental inoculation. The cerebral route is preferred and symptoms appear 6–13 days after inoculation.

—D. LUKE.

I. GULRAJANI, T. S. (1951). **Studies on respiratory diseases of pigs. III. Persistence of influenza viruses in the respiratory tract.**—*J. comp. Path.* **61,** 101-117. 2498

II. GULRAJANI, T. S. & BEVERIDGE, W. I. B. (1951). **Studies on respiratory diseases of pigs. IV. Transmission of infectious pneumonia and its differentiation from swine influenza.**—*Ibid.* 118-139. [Authors' summaries copied *verbatim.* For previous parts, see *V.B.* 22, 97.] 2499

I. Chick embryos, 13 to 14 days old, have been shown to be very susceptible to infection with the virus of swine influenza when inoculated into the amniotic cavity. Such inoculation was found to be a more sensitive method of detecting the C.1. strain in pigs' lungs and nasal washings than inoculation of pigs, ferrets or mice.

Experiments to ascertain the persistence of swine influenza virus in pigs have shown that a mouse adapted strain (C.1.) could be detected in nasal washings and lung suspensions of pigs only up to a week after inoculation. These results were obtained both when a clinical or a subclinical disease was produced by the virus alone, or when bacteria were mixed with a small inoculum of virus. A small experiment in mice gave similar results.

A mild disease was set up in pigs by the inoculation of a recently isolated strain of human influenza A. The virus was recovered from a pig killed on the 7th day, but not from pigs killed on the 28th day and thereafter.

II. Attempts were made to isolate new strains of swine influenza viruses from outbreaks of respiratory diseases in pigs. The material used was obtained from outbreaks in East Anglia and in Northern Ireland. In addition, the lungs of pigs showing consolidation were obtained from a bacon factory and some lungs were collected at local slaughter houses. A good many of the lungs used were bacteriologically sterile. Sometimes pigs alone were inoculated, but in most cases ferrets, mice and developing chick embryos were also inoculated. Transmission experiments with bacteria-free filtrates of lung suspensions indicated the presence of a filterable agent in several specimens, but the clinical symptoms in pigs thus inoculated

differed considerably from those produced by inoculation of swine influenza virus, and no antibodies were produced against the latter virus. No virus was isolated in chick embryos, ferrets or mice.

These observations suggest that swine influenza is not prevalent at present in the United Kingdom and that the form of infectious pneumonia which is most common is due to a virus different from swine influenza. This disease appears to be widespread and needs further study.

AASER, C. S. & ALEGREN, A. (1949). La maladie de Carré chez le chien et chez les animaux à fourrure. **[Distemper in dogs and in fur bearing animals.]**—*Bull. Off. internat. Epiz.* **32**, 182-184. **2500**

A brief summary of the disease as seen in Europe, and the nature of the infective agent.
—J. T. DONE.

AASER, C. S. (1949). La maladie de Carré. **[Canine distemper in Norway.]**—*Bull. Off. internat. Epiz.* **32**, 185-196. **2501**

The disease as seen in foxes and mink was described, the differing susceptibilities of the various species to infection being noted. The efficacy of sera and vaccines, especially Green's distemperoid vaccine, in dogs and fur-bearing animals was also given much attention.
—J. T. DONE.

ALEGREN, A. (1949). La maladie de Carré chez le chien et chez les animaux à fourrure en Suède. **[Distemper in dogs and fur bearing animals in Sweden.]**—*Bull. Off. internat. Epiz.* **32**, 197-209. **2502**

A historical account of the spread of distemper in dogs, foxes and mink, the methods of control adopted, and the appearance of a new distemper-like disease in dogs. [Probably so-called "Hard pad disease".]—J. T. DONE.

RUNGE, S. (1949). Znaczenie odruchu udowego we wczesnych stadiach nosówki psów. **[The importance of the femoral reflex for diagnosis in the early stages of distemper in dogs.]**—*Med. weteryn.* **5**, 674-678. [English summary.] **2503**

R. believes that prognosis of distemper in dogs depends on early recognition of the femoral reflex. This can be observed in the early stages and can be demonstrated by manual pressure. In such cases prognosis is grave. R. advises daily exercise up to a few hours, as keeping the dog without exercise can be harmful.
—JOHN R. MITCHELL.

GHOSS, L. W., COLE, C. & ENGEL, H. (1950). Cuerpos de inclusion de aplicacion especial al diagnostico clinico del distemper canino, **[Inclusion bodies in the clinical diagnosis of dog distemper.]**—*Rev. Med. vet., B. Aires.* **32**, 89-91. **2504**

The authors claim to be able to diagnose dog distemper by examining the conjunctiva and oral mucous membrane for inclusion bodies. Smears are stained with haematoxylin, decolorized in HCl and counterstained with alcoholic eosin. The inclusion bodies are stained bright red.—J. EDWARDS.

FANKHAUSER, R. (1951). Encephalitis und Hard-pad-Symptom beim Hunde. (Eine kritische Übersicht.) **[Encephalitis and hard pad disease in dogs.]**—*Schweiz. Arch. Tierheilk.* **93**, 715-730 & 796-821. [English, French and Italian summaries.] **2505**

After a comprehensive review and discussion of the literature (pp. 715-730), the results of examinations of 320 dogs with nervous diseases are summarized. Hyperkeratosis of the pads was found to be accompanied by various types of encephalitis, including toxoplasmosis. This differs from the observations of MACINTYRE *et al.*, [*V.B.* **19**, 1819; **20**, 644] which associate hyperkeratosis with demyelinating encephalitis. The basis for a new classification of canine encephalitis is given, and it is recommended that the term "hard pad disease" be abandoned.—ROY MACK.

PARRY, H. B. & LARIN, N. M. (1951). **The natural history of virus hepatitis of dogs (Rubarth's disease).**—*Vet. Rec.* **63**, 833-839. Discussion pp. 839-846. [Abst. from authors' summary.] **2506**

The disease is caused by a virus distinct from the distemper group, and is not pathogenic for ferrets. Some cases show neurological signs indistinguishable from those seen in paradistemper. The virus can be cultivated in embryonated hen's eggs.

The development of an improved complement-fixation test for an antigen closely associated with the virus and for antibodies in serum has allowed the course of the infection to be followed more accurately. Clinically inapparent infections are common, and the virus reappears from time to time in the peripheral blood of fully recovered animals. Recovered dogs are solidly immune for at least a year and this is independent of complement fixing serum antibody titres. Immunity may depend on a state of premunition, in which the animal continues to harbour the virus.

The virus is relatively resistant to heat and

desiccation and the infection remains on infected premises for some months. The diagnosis and various matters relating to the control of the disease by prophylactic vaccination were discussed.

The danger of transmitting the infection by the use of biological products containing the virus was stressed.

BURNSTEIN, T. (1951). **Studies on the role of the adrenal gland in resistance against the toxin of the feline pneumonitis virus.**—*Thesis, Cornell.* pp. 29. **2507**

The natural resistance of mice against the toxin of the psittacoid agent producing feline pneumonitis was shown to be influenced by the removal of the adrenal glands. Young mice when adrenalectomized became more susceptible to the toxin, succumbing to higher dilutions than controls. Old mice, naturally refractory to the lethal action of the toxin, succumbed from its effects when their adrenal glands were removed. The toxin did not produce any significant pathological changes in the adrenal glands of mice or kittens.—H. L. GILMAN.

KASCHULA, V. R. (1950). **The epizootiology of Newcastle disease and its control by vaccination.**—*J.S. Afr. vet. med. Ass.* **21,** 134-140. **2508**

In the West Province of South Africa 250 outbreaks of Newcastle disease were diagnosed in one year. In many of these outbreaks circumstantial evidence suggested that wild birds might have carried the infection. A number of the common wild birds were tested by the injection of virulent Newcastle disease virus. The Cape pheasant (*Francolinus capensis*), the laughing dove (*Stegmatopelia senegalensis*) and the Cape sparrow (*Passer melanurus*) all proved susceptible while the turtle dove (*Streptopelia capicola*) was found to be resistant. *Per os,* the Cape sparrow and laughing dove proved susceptible while sub-clinical infections developed in the turtle dove. The value of vaccination under local conditions was discussed.

—D. LUKE.

GUALANDI, G. L. (1951). Ricerche sulla vaccinazione dei polli con virus della pseudopeste a patogenecità attenuata. **[Living attenuated vaccines in Newcastle disease.]**—*Arch. Vet. Ital.* **2,** 283-304. [English, French, German and Spanish summaries. Abst. from English summary.] **2509**

The use of avirulent viruses was studied. Of five viruses examined only the Hertfordshire strain did not produce carriers. Egg adapted Hertfordshire virus vaccine produced a good immunity lasting five months. This vaccine remained viable for 52 days at 18° to 22°C.

—D. LUKE.

TOPOLNIK, E. & BEGANOVIĆ, A. H. (1951). Opažanja o hemaglutinaciji virusa atipične kuge peradi nakon pasaže kroz embrione jaja imunih i neimunih kokoši. **[Haemagglutination by Newcastle disease virus from embryonated eggs of hens immunized or not immunized against the disease.]**—*Vet. Arhiv.* **21,** 399-404. [Abst. from French summary.] **2510**

Newcastle disease virus was passaged on chick embryos. Higher haemagglutination titres were obtained in eggs laid by non-immune hens than in eggs laid by immune hens.—D. LUKE.

VAN ROEKEL, H., BULLIS, K. L., CLARKE, M. K., OLESIUK, O. M. & SPERLING, F. G. (1950). **Infectious bronchitis.**—*Bull. Mass. agric. Exp. Sta.* No. 460. pp. 47. **2511**

This is a useful review of the disease. Laboratory and field experiments on the production of immunity suggest that a reliable method of control may well be found.—K. G. TOWERS.

LÉPINE, P. & SAUTTER, V. (1951). Sur l'infection des pigeons parisiens par le virus de l'ornithose. **[Ornithosis in pigeons in Paris.]**—*Bull. Acad. Med.* **135,** 332-338. **2512**

Sixty-seven of 96 pigeons examined in Paris were positive serologically. Of 12 mice inoculated, four died of ornithosis while the remainder were probably positive. Infected pigeons constitute a public health problem.

—JAS. G. O'SULLIVAN.

PERRIN, J. (1952). **Observations on the relationship between viruses of the psittacosis-lymphogranuloma group and the Rickettsiae.**—*J. gen. Microbiol.* **6,** 143-148. [Author's summary copied *verbatim.*] **2513**

Changes in the metabolism of the chick embryo host cell produced by *p*-aminobenzoic acid or sodium cyanide did not influence the multiplication of psittacosis or Newcastle virus. A suspension of psittacosis virus was unable to catalyse oxygen uptake in presence of glutamic acid, casein hydrolysate, succinic or pyruvic acids. The results suggest that, in its relation to certain metabolic activities of the host cell, psittacosis virus more nearly resembles the true viruses than the *Rickettsiae.*

ZAVAGLI, V. (1951). Recherches comparées sur la Querry fever (fièvre Q) en Italie. **[Q fever in Italy.]**—*Rev. Path. comp.* **51,** 532-541. [English and Italian summaries. Abst. from English summary.] **2514**

Sheep and goats are considered to be the main sources of infection for man. Dogs, which

may become infected by eating infected placental or foetal material, may also prove a source of danger for man. Diagnosis based on the skin test is considered to be of most practical value.
—D. LUKE.

GALLO, C. (1951). Ulteriori indagini ed esperienze sulla febbre Q negli animali in Sicilia. **[Q fever in animals in Sicily.]**—*Zooprofilassi.* **6,** 110-117. [English, French and German summaries.] **2515**

Q fever is widespread in Sicily. 3,706 sera samples from domestic animals were tested: 30–40% of cows, sheep, goats and dogs gave positive results.

Generally the disease has an inapparent course, and often it is found to be associated with brucellosis.

Rickettsia can be present in milk and while they were easily isolated by inoculation of g. pigs, they could not be demonstrated by means of yolk-sac cultures.

Allergic tests seem to correspond well with the results of serological examination.
—M. BERTANI.

SLAVIN, G. (1951). Fièvre du Queensland. (Fièvre "Q".) **[Q fever.]**—*Bull. Off. internat. Epiz.* **36,** 176-180. [English summary.] **2516**

Animal infections are transmitted mainly by ticks, but human beings seem to be very sensitive to inhalation; dust from infected cowsheds may contain large numbers of rickettsia. Large foci of infection have unexpectedly been found in Gt. Britain by serological tests on human beings and cattle.—A. MAYR-HARTING.

SANER, R. G. & FEHLER, B. M. (1950). **A case of Q fever contracted on the Witwatersrand.**—*S. Afr. med. J.* **24,** 1000-1002. **2517**

A case of Q fever in a farm worker is described. In his work the patient came into direct contact with cattle and sheep.
—IAN DAVIDSON.

CHANG, N., ZIA, S. H., LIU, F. T. & CHAO, S. H. (1951). **The possible existence of Q fever in Peking with a brief review on its current knowledge.**—*Chin. med. J.* **69,** 35-45. **2518**

Ten sera from human cases of respiratory disease contained complement-fixing antibodies to *R. burneti* in titres from 1:8 to 1:32 and in one case rising from negative to 1:64 during the course of the illness.—IAN DAVIDSON.

BEEMAN, E. A. (1950). **Q fever—An epidemiological note.**—*Publ. Hlth Rep., Wash.* **65,** 88-92. **2519**

A worker in a Q fever laboratory is thought to have infected with Q fever a man and wife in whose house he lived. Neither patient had had any contact with farm animals or their products.—IAN DAVIDSON.

SIEGERT, R., PETER, H., SIMROCK, W. & SCHWEINSBERG, H. (1951). Q-Fieber-Studien. I. Herstellung und Auswertung diagnostischer Antigene. **[Studies on Q fever. Preparation and evaluation of diagnostic antigens.]**—*Zbl. Bakt. I. (Orig.)* **157,** 309-325. [English, French and Russian summaries. Abst. from English summary.] **2520**

A method of preparing diagnostic Q fever antigens from infected yolk sacs of embryonated eggs was described in detail. This method is a combination of various methods, which secures the production of preparations equal in condition and usefulness. These antigens are adapted for complement-fixation tests and rickettsia agglutination, as was shown by adequate evaluation and comparison with a standard preparation and some immune sera of known antibody content. Antigens prepared from the *R. burneti* strains "Henzerling" and "Zürich" proved equivalent to commercial American preparations as to efficiency, specificity, purity and degree of dispersion, and absence of anticomplementary action.

SERGENT, E., PARROT, L. & HORRENBERGER, R. (1951). Un point de sémantique: Le mot "virus" ne doit pas rester ambigu. **[An etymological point: The word "virus" ought not to remain ambiguous.]**—*Bull. Acad. Nat. Méd.* **135,** 362-365. **2521**

The word 'virus' has become equivocal, being sometimes used in its wider sense (as used by Pasteur) and sometimes in its restricted sense.—W. R. BETT.

KENNEDY, J. S. (1951). **A biological approach to plant viruses.**—*Nature, Lond.* **168,** 890-894. **2522**

The author urges that the virus, both in its plant host and its insect vector, should be studied as a complete system from biochemical, physiological and ecological standpoints. Less attention should be paid to the virus particle alone both in plant and animal viruses.
—N. DEAN.

ROGERS, N. G. (1951). **The effect of merthiolate on the infectivity of certain viruses.**—*J. Lab. clin. Med.* **38,** 483-485. **2523**

In concentrations used to preserve sera merthiolate sufficiently inhibits the infectivity of certain viruses to disrupt mouse serum neutralization tests.—JOHN SEAMER.

EATON, M. D., CHEEVER, F. S. & LEVENSON, C. G. (1951). **Further observations on the**

effect of acridines on the growth of viruses. —*J. Immunol.* **66,** 463-476. 2524

In pneumonitic infections of the allantoic sac of chick embryos nitroacridine had a prophylactic effect, but chloroacridine was ineffective. Both compounds had a slight effect against mumps virus, and the nitro-compound was effective against influenza B. virus. In tissue cultures, both were equally potent against the viruses of mumps and influenza A and B. Acridines may inhibit intracellular viruses both of psittacosis LGV group, and influenza and mumps, although host metabolism modifications may occur.—F. R. HARRIS.

See also absts. **2348** (specific bacteriophage for *B. anthracis*); **2390** (equine influenza); **2398** (symbiotic bacteriophage for identification of *S. typhi-murium*); **2399-2401** (bacteriophage-typing of *Salmonella*); **2409** (equine infectious anaemia); **2679** (report, Colonial Research); **2680** (report, Canada); **2683** (report, Hong Kong); **2684-2685** (reports, Jamaica); **2687** (report, Mauritius); **2688** (report, Tanganyika); **2689** (report, Uganda); **2690-2691** (reports, Eire).

IMMUNITY

BRAUSS, F. W. & BERNDT, H. (1951). Antigengewinnung mittels Ultraschall. [**The preparation of antigens by ultrasonic vibration.**]—*Arch. Hyg., Berl.* **134,** 211-215. [Abst. in *Bull. Hyg., Lond.* **26,** 1208. (1951), copied *verbatim.* Signed: B. MOORE.] 2525

Cultures of a virulent typhoid strain were subjected to ultrasonic vibration for one hour at a frequency of 800,000 cycles per second, and were then filtered through a Berkefeld N candle. The filtrates were inoculated into rabbits and produced typhoid H and O antibodies to titres of the same order as those obtained by the inoculation of commercial typhoid vaccines.

BANKS, T. E., FRANCIS, G. E., MULLIGAN, W. & WORMALL, A. (1951). **The use of radioactive isotopes in immunological investigations. 5. Quantitative aspects of the antibody-antigen reaction.**—*Biochem. J.* **48,** 180-187. [Abst. from authors' summary.] 2526

Results were given for analyses of serological precipitates containing antigens labelled with ^{32}P (lipovitellin) or ^{131}I (iodinated globulins and ovalbumin), and antibodies labelled with ^{131}I. Up to 1% of iodine can be introduced into the proteins of many precipitating antisera without serious loss of their precipitating power. Lipovitellin-antilipovitellin precipitates contained 100 or more molecules of phospholipin per molecule of antibody. The ratio lipid P: vitellin P in these precipitates was 4·3–5·3 : 1, compared with 1·6 : 1 for the sample of lipovitellin used. These results support the view previously put forward (Francis & Wormall, 1950) that antilipovitellin sera contain antibodies capable of precipitating phospholipins.

COOMBS, R. R. A. & HOLE, N. H. (1948). **The conglutination phenomenon. IV. The importance of the choice of complement when examining antisera for the presence of complement-fixing or complement-absorbing antibodies.**—*J. Hyg., Camb.* **46,** 296-310. 2527

In the conglutination reaction the fixation of complements from species other than the g. pig can be demonstrated. Though haemolysis may not occur, conglutination will result from the addition of conglutinin to sensitized cells which have fixed complement. Complements from pig, horse, cat, man and dog were studied. The antisera used were anti-mallein sera from g. pig, rabbit, cat, dog, pig, man, donkey and horse, and anti-typhoid sera from rabbit, cat and man; most of the antisera were experimentally produced though a few resulted from natural infection. The results are clearly illustrated by a series of histograms. They are not easy to summarize but it is shown that many of the conglutinating complements give much better results than g. pig haemolytic complement, and in general horse complement proved the most sensitive. The anti-complementry activity of some antisera for certain complements is also shown. [See also *V.B.* **21,** 406 & 2602 and **22,** 1373.]—G. FULTON ROBERTS.

I. EBERT, R. H. & WISSLER, R. W. (1951). *In vivo* **observations of the vascular reactions to large doses of horse serum using the rabbit ear chamber technique.**—*J. Lab. clin. Med.* **38,** 511-522. 2528

II. EBERT, R. H. & WISSLER, R. W. (1951). *In vivo* **observations of the effects of cortisone on the vascular reaction to large doses of horse serum using the rabbit ear chamber technique.**—*Ibid.* 497-510. 2529

I. Serum sickness in rabbits is characterized by damage to vessel walls and endothelium, blood-sludging and embolism of platelets and leucocytes.—JOHN SEAMER.

II. Cortisone reduces the vascular effects of serum sickness, probably by strengthening the vessels' integrity, as the change is reversible. The authors consider that the suppression of the *in vivo* manifestations is the result of this non-specific effect rather than that of the suppression of antibody formation, or antibody-antigen union.—JOHN SEAMER.

HOLM, G. C., EVELETH, D. F. & DINUSSON, W. E. (1951). **The effect of hyaluronidase**

on the absorption of sera.—*Vet. Med.* **46,** 443-450. 2530

Hyaluronidase absorptive action was confirmed by measuring agglutinin titre increase in farm stock following injections of known agglutinin content. Absorption of homologous serum was always superior to heterologous.

—JOHN SEAMER.

PIGOURY, L. & CHARNY, J. (1951). Réalisation expérimentale, étude clinique, hématologique, sérologique et nécropsique d'un cas d'ictère hémolytique du muleton. [**Haemolytic jaundice in a mule foal.**]—*Rev. vét. Milit.* **6,** 151-161. 2531

A mare carrying a mule foal was experimentally immunized by nine injections of rising amounts of washed red blood corpuscles from donkeys, during the last two months of pregnancy. At the end of this treatment, the haemolytic titre of the mare's blood had risen to 1 : 16, and fell rapidly after birth, while the agglutinin titre against donkey erythrocytes did not rise beyond 1 : 80 (1 : 40 against mule erythrocytes) and thereafter fell slowly. A relatively moderate concentration of antibodies was observed in the colostrum on the day of birth, but the milk titre fell rapidly thereafter. The mule foal was sturdy at birth and, except for slightly icteric sclerae, showed no outward signs of disease for the first four days of its life. During that time, however, the blood picture revealed fairly pronounced anaemia, reduced erythrocyte resistance, auto-agglutination and auto-haemolysis. On the fifth day an extremely severe, hyperchromic, aplastic anaemia with haemoglobinuria and pronounced terminal leucocytosis developed. Neither erythroblasts nor reticulocytes could be found. The animal died in a state of collapse on the sixth day. Extreme anaemia was confirmed P.M.

The unusually slow development of the condition in this case is attributed to the relatively low antibody titre in the mare's serum and colostrum.—G. P. MARSHALL.

ASCHAFFENBURG, R., BARTLETT, S., KON, S. K., ROY, J. H. B., SEARS, H. J., INGRAM, P. L., LOVELL, R. & WOOD, P. C. (1952). **The nutritive value of colostrum for the calf. VIII. The performance of Friesian and Shorthorn calves deprived of colostrum.**—*J. comp. Path.* **62,** 80-82. [Authors' summary copied *verbatim.* For previous parts, see *V.B.* **20,** 1701-1705 and **22,** 1757-1760.] 2532

Twelve Shorthorn and twelve British Friesian bull calves were deprived of colostrum and reared for 3 weeks on a standard diet based on dried skim milk. Eleven calves of each breed died. There were no differences between the two breeds in the mean age of the calves at death or in their performance.

SWINEFORD, O., JR. & HOLMAN, J. (1949). **Studies in bacterial allergy. I. Introduction: a brief critical review.**—*J. Allergy.* **20,** 292-300. 2533

A brief review with 49 references of the history and conventional data on bacterial allergy. The topics discussed include the Arthus phenomenon, selection of vaccines for treatment, and the tuberculin reaction.

—W. R. BETT.

GARD, S. (1951). **Hemagglutination as a diagnostic method. Theoretical aspects.**—*Acta path. microbiol. scand.* Suppl. No. 91. pp. 107-114. Discussion pp. 122-125. [In English.] 2534

A broad review and commentary upon the intrinsic mechanism of the haemagglutination reaction at the cell surface.—JOHN SEAMER.

See also absts. **2346** (serology of *Vibrio*); **2349** (anthrax vaccine); **2361** (serology of avian tubercle bacilli); **2366** (haemagglutination test for TB.); **2373** (B.C.G.); **2382** (swine erysipelas); **2383** (simultaneous vaccination against swine erysipelas and tetanus); **2386** (*P. multocida* antigen); **2403** (ring test); **2405-2407** (brucellosis); **2413** (fowl spirochaetosis); **2415** (agglutination of erythrocytes by *Cl. septicum*); **2454-2468** (F. & M. disease); **2472-2473** (rabies); **2474-2475** (vaccinia); **2482** (poliomyelitis); **2491** (rinderpest); **2508-2510** (Newcastle disease); **2520** (Q fever); **2546** (flocculation test in trichinosis).

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

SERGENT, E. & SERGENT, E. (1950). Études sur le varron du boeuf en Algérie. Essais de traitement et de vaccination. [**Warbles in cattle in Algeria.**]—*Arch. Inst. Pasteur Algér.* **28,** 255-322. 2535

Experiments on warble control in cattle in Algeria were preceded by a study of the life history of *Hypoderma bovis.* A description is given of the buccal region of the adult.

Infestation seems to confer a certain resistance to reinfestation. Neither true immunity nor premunition exist. Cattle previously infected develop anaphylactic symptoms when injected subcutaneously with a sterilized antigen prepared from either dead or living larvae.

D.D.T. was used as a repellent against the egg-laying females and was applied to warbles on the backs of cattle. Both D.D.T. and garlic (*Allium sativum*) given orally were ineffective as preventatives of development of the parasite

within the body of the host. Limited results were obtained from vaccination with a preparation from dead larvae.—P. M. JAMES.

PETERSEN, A. (1951). Myiasis interna. Bemaerkninger til et fund af levende eristalislarver i en absces i brysthulens vaeg af et svin. **[Internal myiasis. Live *Eristalis* larvae in an abscess in the thoracic wall of a pig.]** — *Maanedsskr. Dyrlaeg.* **62,** 39-43. 2536

The finding of these larvae gave rise to theoretical considerations as to the possible paths of invasion through fistulae either from the surface of the skin or from the alimentary tract.

—P. SCHAMBYE.

WHELLAN, J. A. (1951). **Tsetse fly in Southern Rhodesia, 1950.**—*Rhod. agric. J.* **48,** 563-571. 2537

There was little change in the tsetse fly position, except in the Mtoko district, where some advance of *G. morsitans* from Portuguese East Africa, was reported. The standard methods of control were practised, and details of the game destruction, and results of fly counts from traffic cleansing points in the Mtoko district were given. There was one outbreak of animal trypanosomiasis.—D. W. JOLLY.

GORDON, H. McL. & KEEP, J. M. (1951). *Pneumonyssus caninum,* **the nasal mite of dogs.**—*Aust. vet. J.* **27,** 318. 2538

A report on the finding in the nasal passages of a greyhound, of larvae of mites which the authors considered to be probably *P. caninum.* No pathological changes were associated with the presence of these mites in the host.

—B. A. FORSYTH.

See also absts. **2542** (role of oribatid mites in the life history of *Moniezia);* **2684** (report, Jamaica); **2688** (report, Tanganyika); **2691** (report, Eire).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

ONO, Y. & ISODA, M. (1951). **[Studies on the fascioliasis. I. Observations on the life-history of *Fasciola hepatica.*]**—*Jap. J. vet. Sci.* **13,** 87-96. [English summary.] 2539

The development from the egg to the miracidium takes 10–14 days in an incubator (28°-32°C.), 17–18 days at room temperature in early summer (21°–26°C.); and more than 30 days at room temperature in the middle of April in Tokyo (10·5°–20°C.).—KOGI SAITO.

OGOSHI, S. (1951). **A study on schistosomiasis in cattle.**—*Vet. Div., Agric. Coll., Tokyo Univ.* pp. 179-186. 2540

Examination of 661 cattle in 1944 and of 2,051 cattle in 1950 in the Kofu Basin in Yamanashi district revealed an incidence of *Schistosoma japonicum* of 10·5% and of 43·4% respectively; the incidence in man in 1944 was 1·0% and in 1950 it was 6·2%. As cattle in this district are used for work in the paddy fields, they are considered to be the important source of *Schistosoma* infection.

The author's method of examination is to scrape the superficial mucous layer at the upper part of the colon with a curette, the scrapings obtained being examined after moistening with glycerin.

In 1949-50 the infection rate in cattle estimated by this method was 52·0–74·1%.

—KOGI SAITO.

REES, G. (1952). **The structure of the adult and larval stages of *Plagiorchis* (*Multiglandularis*) *megalorchis* n. nom. from the turkey and an experimental demonstration of the life history.** — *Parasitology.* **42,** 92-113. [Author's summary modified.] 2541

Large numbers of *P. megalorchis* were found in the intestine of four turkey poults of a total of 13 which had died and were considered to have been the cause of death.

The anatomy of the adult worm and the larval stages were described. The first intermediate host of the parasite is *Lymnaea pereger,* and the second intermediate host any of the following species of insect larvae: *Chironomus riparius* Meigen, *Culicoides stigma* Meigen, *Culicoides nubeculosus* Meigen and *Anatopynia* (*Psectrotanypus*) *varius* Fabr.

The life cycle was demonstrated experimentally by the feeding of insect larvae containing encysted cercariae to turkey poults.

The turkey is probably not the normal host of *P. megalorchis.* It probably occurs naturally in some species of wild bird.

RAYSKI, C. (1952). **Observations on the life-history of *Moniezia* with special reference to the bionomics of the oribatid mites.**—*Rep. XIVth Int. vet. Congr.* **2,** 51-55. [French and German summaries. Abst. from author's summary.] 2542

The population of mites, some of which are known to carry the cysticercoids of *Moniezia,* is very low in pastures which are under first year grass. As humus increases in amount, the mites increase in number. The highest mite population was found in permanent grassland, particularly on strips of grazing

which, for one reason or another, could not be cultivated. Mites occur fairly evenly throughout the year—seasonal fluctuations being very small.

R. emphasized that permanent pasture is thus more dangerous for young stock than leys.

JEPSEN, A. & ROTH, H. (1952). **Epizootiology of Cysticercus bovis—resistance of the eggs of Taenia saginata.**—*Rep. XIVth Int. vet. Congr.* **2,** 43-50. [French and German summaries. Author's summary modified.] **2543**

The incidence of *Cysticercus bovis* in Danish cattle is steadily increasing. The figures rose for the first time after the first world war when certain districts of North-Schleswig, formerly under German administration, were returned to Denmark. The second rise began after 1933, and became particularly pronounced during and after the German occupation in the second world war. In 1948, 1·25% of oxen and 0·71% of calves were found to be infected.

The incidence of *Taenia saginata* shows a corresponding increase, the peak being reached in 1946, when 3·6 per 10,000 inhabitants were treated for this tapeworm in Danish hospitals. Five times as many women as men were affected.

GAUGUSCH, Z. (1950). **Contribution to studies of the resistance of** *Cysticercus cellulosae.*—*Bull. State Inst. Marine & Trop. Med. Gdańsk, Poland.* **3,** 85-87. [Abst. in *Trop. Dis. Bull.* **48,** 1022-1023. (1951), copied *verbatim.* Signed: J. J. C. BUCKLEY.] **2544**

Viability tests were carried out on *Cysticercus cellulosae* after pieces of infected pork had been exposed for varying periods to the action of low temperatures, brine solution and putrefaction. A modified version of Müller's viability test was used, consisting of the addition of 5 cc. of filtered pig's gastric juice to 20 cc. of the 50 per cent solution of pig bile in physiological salt solution, which was found to accelerate the eversion of the scolex in living cysticerci.

A meat sample (1 kgm.) was kept at 0° to 2°C., and 5 to 10 cysticerci were removed daily for viability tests. The cysts were resistant to this treatment for 53 days. On the 53rd day 3 out of 10 cysts removed were alive. No living cysts were found on the 54th, 55th and 56th days. Another meat sample was kept at a constant temperature of −5°C. and the same procedure was followed. After 6 days, of 10 cysts removed and examined, 2 were alive. After 7 and 8 days, none was alive.

Two meat samples (1 kgm.) were treated with salt solution by the "tank-brine" and "injection-brine" process used in the bacon industry, and kept at +4°C. and cysts were removed daily and examined as above. Viable cysts were found up to 3 days later; on the fourth day the cysticerci examined were dead.

Untreated samples of infected ham were kept at a temperature of 18° to 20°C. Cysts were removed and examined daily after the third day when visible putrefaction of the meat had begun. Viable cysts were recovered from the meat up to 26 days later. Only dead cysts were removed on the 27th and 28th days.

PELLEGRINI, D. (1950). Le "Cysticercus dromedarii" du chameau et des bovins (Pellegrini, 1945) et le "Taenia hyaenea" correspondant de l'hyène (Baer, 1927). [*Cysticerus dromedarii* **in camels and cattle and** *Taenia hyaenea* **in hyenas.**]—*Bull. Off. internat. Epiz.* **33,** 21-27. **2545**

The life cycle of *Taenia hyaenea* and the morphology of the final and intermediate stages were described. *C. dromedarii* may occur in Somaliland cattle, but as the final stage is incapable of development in man, it is important at meat inspection that carcasses are not detained unnecessarily. Distinction between *C. dromedarii* and *C. cellulosae* rests on the different sizes of the rostellar hooks.

—JAS. G. O'SULLIVAN.

BOZICEVICH, J., TOBIE, J. E., THOMAS, E. H., HOYEM, H. M. & WARD, S. B. (1951). **A rapid flocculation test for the diagnosis of trichinosis.**—*Publ. Hlth Rep., Wash.* **66,** 806-814. [Part of authors' summary copied *verbatim.*] **2546**

A rapid flocculation test for the diagnosis of trichinosis is described in detail. Comparison of the flocculation test with the complement fixation test indicated that they were equally sensitive and apparently gave no falsely positive reactions. The flocculation test has several outstanding advantages including the rapidity with which it can be performed and the fact that highly trained personnel are not required.

WATANABE, S. (1951). **On Stephanuriasis in the pig.**—*Vet. Div., Agric. Coll., Tokyo Univ.* pp. 196-205. **2547**

The eggs and larvae of *Stephanurus* are capable of hatching and developing to the infective stage at a depth of 25 cm. below the surface of water. From observation of their development in shallow aqueous media during a 12-month period W. found that the summer months were optimal and the end of October the latest for adequate development of infective larvae.

Infestation of pigs begins in the Kanto

district in April, reaches its height in the summer months and continues until the end of October.

The eggs are sensitive to low temperatures and both eggs and larvae to high temperatures and to desiccation; eggs cannot hatch at below 10°C. Eggs kept at 23–27·5°C. at a depth of 10 cm. in fresh pig's urine lived without hatching till August and died in September. They were destroyed by cresol preparations and by phenol.—KOGI SAITO.

ESSERMAN, H. B. & SAMBELL, P. M. (1951). **The uptake of radio-active phosphate by nematode parasites and by tissues of the sheep.**—*Aust. J. sci. Res. Series B.* **4,** 575-580. [Authors' summary copied *verbatim.*] **2548**

The relative uptake of radio-active phosphate by the tissues of the sheep and by the parasites, *Trichostrongylus* spp., *Haemonchus contortus*, and *Oesophagostomum columbianum* has been investigated.

After injections into the abomasum of the host, *Trichostrongylus* accumulated phosphate very rapidly and in excess of the absorption by the small intestine of the host, but after intravenous injections the uptake by the parasites was similar to that of the small intestines.

The uptake of labelled phosphate by *H. contortus* showed an appreciable rise 8 hours after both intra-abomasal and intravenous injections, whereas by this time the phosphate content of the host's abomasal tissues was decreasing.

O. columbianum absorbed less phosphate than the tissues of the host's rectum up to 4 hours after both methods of dosing, but from that period showed a rise that was somewhat variable.

The significance of these results is discussed. It is suggested that the parasites feed on the tissues of the host and not on the contents of the alimentary tract.

MORGAN, D. O., PARNELL, I. W. & RAYSKI, C. (1951). **The seasonal variations in the worm burden of Scottish hill sheep.**—*J. Helminth.* **25,** 177-212. [Authors' summary modified.] **2549**

The spring increase in worm egg output of Scottish hill sheep was correlated with an increase in worm burden. The increase was mainly due to members of the Trichostrongylidae, and of these the stomach worms, *Ostertagia* spp. and *Trichostrongylus axei*, were the most important. This increase in the worm burden in the spring was due to larvae picked up at that time, and there was no evidence that any were lying dormant throughout the winter in the mucous membrane of the abomasum and small intestine. Some other species, such as *Bunostomum trigonocephalum*, do not show this increase.

About January, when infestations in gimmers and ewes are very low, appreciable infestations are common in hoggs.

This investigation has revealed the times when the important species of nematodes are present in maximum numbers in Scottish hill sheep; it is hoped that these data will provide a basis upon which plans for prophylactic dosing can be made.

SPINDLER, L. A. (1951). **Effect of parasites on the growth of pigs.**—*Vet. Med.* **46,** 421-427. **2550**

A general discussion on the effects of *Ascaris* and of *Strongyloides* infestation in stunting growth and development in pigs.

—JAS. G. O'SULLIVAN.

SPRENT, J. F. A. (1952). **On the migratory behavior of the larvae of various *Ascaris* species in white mice. I. Distribution of larvae in tissues.**—*J. infect. Dis.* **90,** 165-176. [Author's summary modified.] **2551**

Mice were infected by feeding the embryonated eggs of the following species: *A. lumbricoides* (pig), *A. lumbricoides* (human), *A. columnaris, A. mustelarum, A. equorum, Toxascaris leonina, Toxascaris transfuga* and *Toxocara canis*. The distribution of the larvae in the various tissues of the mice at daily intervals from 1–14 days as well as at three and four weeks after infection was investigated.

Two kinds of migratory behaviour were observed: (a) that manifested by most of the larvae of *A. lumbricoides* and *A. equorum*, consisting of migration through the liver, lungs and intestine, followed by eventual disappearance of living larvae from the tissues of the mouse (tracheal migration); (b) that manifested by the larvae of the other species investigated, resulting in more or less permanent infection of the rodent with encysted but living larvae (somatic migration). While the encysted larvae of *T. canis, A. columnaris* and *A. mustelarum* occurred mostly in the subcutaneous connective tissue and in tissues other than the intestines, many of the larvae of *T. leonina* and *T. transfuga* were encysted in the wall of the caecum and rectum.

O'CONNOR, G. R. (1951). **Morphological and environmental studies on the hatching of ascarid eggs *in vitro*.**—*J. Parasit.* **37,** 179-182. **2552**

The eggs of *Ascaris lumbricoides* from pigs,

suspended in each of five portions of Tyrode's solution all at pH 7·4–7·6, (a) the pH being adjusted with NaOH, (b) (c) (d) and (e) containing 5% crystalline trypsin, 1% sodium glycocholate, minced chicken pancreas and 0·3% gastric mucin respectively, hatched in each solution, the addition of these substances to the Tyrode's solution having no effect on the rate of hatching. The maintenance of temperature at 38–40°C. and constant pH were important factors.—D. W. JOLLY.

WELLS, H. S. (1952). **Studies of the effect of antibiotics on infections with the mouse pinworm *Aspiculuris tetraptera*. II. The actions of neomycin, dihydrostreptomycin and chloramphenicol.**—*J. infect. Dis.* **90**, 34-37. [Author's summary modified.] **2553**

The effects of neomycin, dihydrostreptomycin and chloramphenicol on infection of the mouse with *Aspiculuris tetraptera* have been presented. Administration of these drugs resulted in an increase in the worm burden as compared with the controls.

UEDA, A. (1949). **[A recent case of equine setariasis in Hokkaido.]**—*J. Jap. vet. med. Ass.* **2**, 265-268. **2554**

P.M. examination of a horse with severe paralysis of the hind quarters revealed a softened focus with small cavities in the spinal cord between the fifth, sixth and seventh cervical vertebrae. Histological examination revealed the presence of granular and eosinophile cells in the tissues surrounding the cavities, swelling of the medullary sheath of the nerve fibres and secondary changes in the ganglion cells, but vascular changes and reaction of glial cells were rare.

Although no worms were found, the lesions resembled those of *Setaria* infestation. Only one case of *Setaria* infestation had previously been reported from Hokkaido district.

—KOGI SAITO.

See also absts. **2681** (report, Australia); **2683** (report, Hong Kong); **2684-2685** (reports, Jamaica).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

I. PEDRERO, E., JR. & KOZELKA, F. L. (1951). **Effect of various pathological conditions on the copper content of human tissues.**—*Arch. Path.* **52**, 447-454. **2555**

II. PEDRERO, E., JR. & KOZELKA, F. L. (1951). **Effect of copper on hepatic tumors produced by 3′-methyl-4-dimethylaminoazobenzene.**—*Ibid.* 455-457. **2556**

I. In adult human patients having no pathological changes in the kidneys and liver, the copper content of these organs was 18–31 mg. and 11–29 mg. per 100 mg. of tissue respectively. Lower values occurred in diseased conditions, and in children.

II. Addition of 0·25% of copper to the diet of rats fed 3′-methyl-4-dimethyl-aminoazobenzene inhibited tumour development. Rats with tumours produced by feeding this substance in the absence of dietary copper had a subnormal copper content in the liver.

—F. R. HARRIS.

SHARP, D. G., ECKERT, E. A., BURMESTER, B. R. & BEARD, J. W. (1952). **Particulate component of the plasma of fowls with avian lymphomatosis.**—*Proc. Soc. exp. Biol., N.Y.* **79**, 204-208. [Authors' summary copied *verbatim.*] **2557**

A particulate material has been obtained from the plasma of chickens affected with the RPL 12 lymphoid tumor strain. Electron micrographs of the particles sedimented directly from plasma and of those in ultracentrifugal concentrates reveal spherical or spheroidal particles of sizes varying from 70 to 160 mμ. in diameter and an average diameter of about 117 mμ. Particle counts on the individual plasmas of birds with advanced disease gave values of 1×10^7 to 160×10^7 particles per ml. in contrast with the normal plasmas in which only occasional or no particles of this size range were observed. The findings with this form of the leukosis complex are remarkably similar to the results of analogous studies on erythromyeloblastic leukosis. The particles seen in the present work are interpreted, tentatively, as representing the virus of one form of avian lymphomatosis.

See also absts. **2611** (examination of collagen from tumourous lesions by electron microscope); **2693** (report, U.S.A.).

NUTRITIONAL AND METABOLIC DISORDERS

ANON. (1951). **Cottonseed meal.**—*Nutr. Rev.* **9**, 284-286. **2558**

The pigment glands of cottonseed meal which contain gossypol may be removed by flotation rendering the meal non-toxic. Gossypol in pure form or as pigment glands inhibits

growth in chicks and rats, and in the latter appears to impair spermatogenesis, but not ovulation. Gossypol is an antitoxidant; it is also an appetite inhibitor. Because of its toxic properties however, it is unsuitable as an antioxidant in mixed feeds.—E. M. CRUICKSHANK.

MICHAUX, A. (1950). Les substances réductrices d'origine pectique an cours de la digestion chez les ruminants. [**Reducing action of substances of pectic origin on ruminant digestion.**]—*C.R. Acad. Sci., Paris.* **230,** 2051-2053. 2559

A discussion of the literature on feeding tests in sheep concerning the nutritional importance of pectic material and in particular the reducing sugars which it contains

—CHARLOTTE M. WOOD.

SIMMONET, H. (1951). Nutrition et constitution. [**Nutrition and health.**]—*Rec. Méd. Vét.* **127,** 637-650. 2560

This paper explains and stresses the importance of the role and influence of nutrition, as one of the environmental factors in the health of domestic animals and in their resistance to disease. It also makes a plea for more detailed study of the problems of feeding and nutrition in all veterinary colleges.

—CHARLOTTE M. WOOD.

WADE, P. M. (1951). **Feeding in relation to the keeping quality of hen eggs.**—*J. Dep. Agric. Vict.* **49,** 396-398. 2561

Experimental groups were fed varying proportions of bran, pollards, and meatmeal as mash with wheat or wheat, oats, and barley for grain. Variation in the ration had no effect on the keeping quality of the eggs, a uniformly high standard being achieved on all rations.

—L. HART.

SPEELMAN, S. M. (1951). De toepassing van antibiotica in veevoeders. [**Administration of antibiotics with fodder.**]—*Tijdschr. Diergeneesk.* **76,** 368-371. 2562

The addition of antibiotics to the feed of young animals resulted in growth stimulation and increased resistance to infections, the efficiency of the fodder being increased.

—F. R. HARRIS.

BRANION, H. D. & HILL, D. C. (1951). **The comparative effect of antibiotics on the growth of poults.**—*Poult. Sci.* **30,** 793-798. [Authors' summary slightly modified.] 2563

Aureomycin hydrochloride, penicillin G potassium, terramycin hydrochloride or streptomycin sulphate, when each was added at a level of 25 mg. per kg. of (a) a diet containing 15% animal protein supplements and (b) of an all plant protein diet supplemented with crystalline vitamin B_{12}, resulted in a growth response in turkey poults to eight weeks of age. Feed utilization was improved with the all plant protein diet but not with the animal protein diet by the addition of the antibiotic. The relative ability of these antibiotics to stimulate growth was not the same from 0–4 weeks as from 4–8 weeks. Chloromycetin (chloramphenicol), at the same level as the other antibiotics did not improve growth or feed utilization with either diet. The addition of crystalline vitamin B_{12} to the all plant diet improved growth and feed utilization.

ELY, C. M. (1951). **Chick-growth stimulation produced by surfactants.**—*Science.* **114,** 523-524. 2564

A preliminary report. Surface active agents such as laundry detergents act in similar manner to the antibiotics tested in the experiments reported previously (*V.B.* **22,** 1435); supplements of lauryl ethylene oxide condensate fed at levels of 13–454 g. per 100 lb. ration increased growth in chicks up to 12% over that in controls.—K. J. SINCLAIR.

GROENEWALD, J. W. (1951). **Mineral and trace element requirements of animals in South Africa.**—*J.S. Afr. vet. med. Ass.* **22,** 53-61. 2565

Dietary deficiencies are usually determinable by analysis. Amounts and proportions of macro-elements should be correct before trace elements are considered. Complexes may be formed among trace elements with formation of insoluble materials, unexpected results being obtained.—F. R. HARRIS.

DAVIS, G. K. (1951). **Trace elements in the nutrition of cattle.**—*J. Amer. vet. med. Ass.* **119,** 450-451. [Only abst. given. Abst. from abst.] 2566

The effects of deficiency of copper and cobalt—two trace elements likely to be deficient in the nutrition of cattle in the U.S.A.—are described and levels in feeds suggested for prophylaxis.—CHARLOTTE M. WOOD.

SNAVELY, J. R. (1952). **Hepatic factors in salt and water metabolism.**—*Amer. J. med. Sci.* **223,** 96-105. [Author's summary copied *verbatim.*] 2567

Selected observations on hepatic influences in the homeostasis of extracellular fluids are reviewed. Attention is again called to the role of the liver in the physiologic equilibration of the effects of steroids with both sexual and

renal tubular influences. The possibility that increased activity levels of salt-active hormones is the common denominator of water and salt retention in both hepatic disease and congestive heart failure is recalled.

TAIT, J. F., SIMPSON, S. A. & GRUNDY, H. M. (1952). **The effect of adrenal extract on mineral metabolism.** — *Lancet.* **262,** 122-124. [Abst. from authors' conclusions.] **2568**

The mineral activity in adrenal extract is due to a highly active compound or compounds which is not one, or a combination, of the known crystalline cortical steroids.

The steroids used by Selye—*i.e.,* deoxycortone acetate and Reichstein's s—to produce experimental arthritic lesions in laboratory animals do not significantly contribute to the mineral activity of A.C.E. [adrenal cortical extract], although their action may be similar to that of the active compound (Selye 1946).

Cortisone isolated from adrenal extracts and perfusions by paper chromatography is likely to have an anomalously high mineral activity. This will not apply to the perfusate unless the active mineralocorticoid is secreted by the gland.

The authors consider that a combination of the microbio-assay and the paper chromatographic methods of isolation is suitable for the investigation of small amounts of other biological materials, such as blood-plasma, for mineralocorticoid activity.

TALSMA, D. (1951). Enige proeven met kaliumchloride als therapeuticum bij acetonaemie van melkkoeien. **[Potassium chloride in the treatment of acetonaemia in dairy cows.]**—*Tijdschr. Diergeneesk.* **76,** 408. [English summary.] **2569**

Oral administration of 40 g. per day of potassium chloride failed to produce successful response within four days in eight out of nine cases of acteonaemia in dairy cows; the therapeutic action of potassium chlorate depended upon the chlorate ion.—F. R. HARRIS.

DAS, P. K. & STEWART, J. (1950). **The appetite of lambs grazing cobalt-deficient pasture.**—*Empire J. exp. Agric.* **18,** 112-118. [Authors' summary modified.] **2570**

By measuring the faecal excretion of groups of lambs grazing cobalt-dressed and cobalt-deficient pasture it was ascertained that the lambs grazing the cobalt-deficient pasture were not eating nearly as much as those grazing the top-dressed pasture. The authors suggest that the clinical symptoms of cobalt-deficiency, *i.e.* marasmus, might be the result of the low food-intake, and that the low intake might be caused by the low cobalt-content of the food interfering with the physiological controls of appetite.

ANON. (1951). **Epithelial pigmentation and copper deficiency.** — *Nutr. Rev.* **9,** 121-122. **2571**

Animals on diets extremely deficient in Cu frequently exhibit anaemia and greying of hair (achromotrichia). When the deficiency is less severe, only achromotrichia occurs. It can be prevented by raising the Cu content of such diets to about 27 μg. per g. Administration of liver, yeast, alfalfa or the ash of these substances, is also effective. It is thought that in the absence of Cu, the Cu-containing enzyme, tyrosinase, is reduced in amount and is unable adequately to fulfil its role of converting various intermediary metabolites to the melanin pigment of hair and epithelial tissues. This hypothesis is supported by experiments on human skin slices, taken by biopsy after erythematous doses of ultra-violet light, which increase the size and activity of the melanoblasts of the skin. *In vitro,* this irradiated skin produced melanin only in the presence of tyrosine. That the enzymatic oxidation of the tyrosine was involved was apparent, since heating the skin slices or incubation with a specific tyrosinase inhibitor prevented melanin formation.

—E. M. CRUICKSHANK.

WASHBURN, L. E. (1946). **Skeletal abnormality of probable nutritional-endocrine origin observed in cattle receiving antirachitogenic rations.**—*J. anim. Sci.* **5,** 395. [Only abst. given. Abst. from abst.] **2572**

It is stated that lameness, crooked feet and legs, fragile bone and eroded articular surface has been seen in cattle prepared for showing by allowing them to be suckled by nurse cows.

Rats were used in an investigation of this condition and the rats had marked reduction in the weight of the thyroid gland. This was not believed to be related to the iodine content of the ration and it is claimed that it could be prevented by supplementing the ration with approximately 30 p.p.m. of copper. The disease in bull calves fed on nurse cows could be prevented, it is claimed, when copper was fed at the level of about 15 p.p.m.—M.C.

CUPPS, P. T. & HOWELL, C. E. (1949). **The effects of feeding supplemental copper to growing foals.** — *J. Anim. Sci.* **8,** 286-289. **2573**

In an experiment to find out if the feeding of supplementary copper to horses would pre-

vent erosions of the articular cartilages of the joints of the long bones as reported for cattle [see preceding abst.], two Percheron foals were given supplemental copper at the rate of 10 p.p.m. and 100 p.p.m. respectively for 255 days, two controls being given the same ration but with no extra copper. At the end of the experiment one control foal and the foal receiving 100 p.p.m. copper were killed and examined P.M. Erosions were present in several joints of the control foal and in the elbow joint of the foal given extra copper.

Blood samples taken during life from the four foals gave an average red cell count of 9,550,000 per cu.mm. The red cell volume was 35·2% and the haemoglobin was 13·37 g. per 100 ml. It was concluded from blood and liver copper estimations that the copper requirement for growing foals is less than 8 p.p.m. in the ration.—L. G. DONALD.

ALLCROFT, R. (1952). **Conditioned copper deficiency in sheep and cattle in Britain.**—*Vet. Rec.* **64**, 17-24. 2574

The pathology and symptoms of copper-deficiency diseases were discussed and earlier publications on aetiology were summarized. Further evidence indicated that although high molybdenum intake may precipitate deficiency in cattle (but probably not in sheep) an unknown dietary factor is the dominant cause of swayback and pining in some areas.

—P. H. HERBERT.

MONGODIN, B. & TALIBOUNA, G. (1951). Troubles graves d'avitaminose chez des zébus, au Niger. **[Serious vitamin A deficiency in zebu cattle in French West Africa.**—*Bull. Serv. Élev. Industr. anim. A.O.F.* **4**, Nos. 2-3, 17-23. 2575

Symptoms of severe blepharitis, keratitis, conjunctivitis, hemeralopia [day-blindness], diarrhoea, emaciation and nervous troubles leading to death in zebu cattle feeding around certain wells in East Niger, are described. Ocular symptoms—even of an advanced degree—disappeared in a few days after administration of vitamin A alone; the nervous symptoms cleared more slowly.—CHARLOTTE M. WOOD.

EATON, H. D., HELMBOLDT, C. F., JUNGHERR, E. L. & CARPENTER, C. A. (1951). **Effect of vitamin A depletion on liveweight, plasma and liver levels of vitamin A and microanatomy in young dairy calves.**—*J. Dairy. Sci.* **34**, 386-395. 2576

Depletion of vitamin A in calves caused no decrease in live weight but a decline in liver stores and plasma levels together with exophthalmos, muscular incoordination and diarrhoea. The epithelium of the ducts of the parotid glands had squamous metaplasia.

—R. MARSHALL.

GLÄSSER, K. (1949). Die seuchenartige (enzootische) Herzmuskelentartung des Schweines. **[Enzootic apoplectic heart muscle degeneration in swine.]**—*Tierärztl. Umsch.* **4**, 151-154. 2577

The name used in the title is that which G. considers the correct one for the disease commonly called "Herztod" in Germany. G. discussed the four main theories about its causation:— (1) intoxication arising from ingested food, directly or after its metabolism; (2) vitamin or mineral deficiency; (3) anaemia with consequent circulatory failure; and (4) infection. He favoured the first two and considered the origin of the disease to be broadly nutritional and probably complex. In the presence of outbreaks of the disease a thorough change in diet and management was advised, together with the administration of vitamins A, B and C, and mineral mixtures. Green-stuff should be given abundantly and also access to open ground.

Clinically affected pigs need the same treatment but in urgent form, *i.e.*, anti-anaemic drugs and vitamins by injection, and perhaps also digitalis.—J. EDWARDS.

GRANT, A. B. (1951). **Antivitamin D factor.** [Correspondence.]—*Nature, Lond.* **168**, 789-790. 2578

Controlled feeding studies, using rats and the determination of the percentage of ash in the femur, confirmed the occurence of an anti-vitamin D factor in green oats reported in the literature. [See also *V.B.* **19**, 1331, **21**, 1438 and 3671.]—CHARLOTTE M. WOOD.

ANON. (1951). **Environment and vitamin content of food plants.**—*Nutr. Rev.* **9**, 189-190. 2579

The influence of temperature on the content of vitamin B_1, riboflavin and nicotinic acid in plants was studied, in the stems and leaves only, of ten species. The plants were subjected to low or high temperatures for several weeks. Tomatoes, beans and soya beans, had a higher vitamin content at 28–30°C.; and broccoli, cabbage and spinach, at 10–15°C. In clover, lupins, peas and wheat, riboflavin, but not invariably the other vitamins, was increased at the lower temperature. The differences in vitamin content due to temperature ranged from 15 to 60%. The type of season and the use of fertilizers also affect vitamin content. In wheat, P alone increased, but K decreased, the vitamin B_1.

Nitrates increased the nicotinic acid, while nitrates combined with K increased the pantothenic acid. The riboflavin in wheat was lower in a wet than in a normal season; in oats the reverse was true.—E. M. CRUICKSHANK.

ANON. (1951). **Vitamins in cereals and grasses.**—*Nutr. Rev.* **9,** 192. 2580

In 16 varietes of oats the range in vitamin content, in μg. per g. was: nicotinic acid, 4·4–11; vitamin B_1, 5·37–9·69; riboflavin, 1·05–1·87; pantothenic acid, 6·3–12·7. All contained enough vitamin B_1 but too little riboflavin to meet the dietary requirements of pigs. Protein content was positively correlated with both nicotinic acid and vitamin B_1. Pantothenic acid was negatively correlated with protein and all three vitamins. These results suggest that the nutritional qualities of oats may be improved by selective breeding. Timothy hay should be cut at the early bloom stage, when fibre is relatively low and the content of protein, vitamin B_1 and riboflavin is relatively high. Barley, oats, rye, wheat and rye grass, if cut when 3–4″ high, and carefully dried, form useful supplements to poultry rations. They are high in carotene, and all form sources of vitamin B_1, riboflavin and nicotinic acid which are comparable to alfalfa leaf meal, dried buttermilk or dried whey. It is emphasized that all nutrients of the diet must be considered when stating the requirements for any specific factor.

—E. M. CRUICKSHANK.

AXELROD, H. E., GULLBERG, M. G. & MORGAN, A. F. (1951). **Carbohydrate metabolism in riboflavin-deficient dogs.**—*Amer. J. Physiol.* **165,** 604-619. 2581

The fat, protein and carbohydrate content of a basal riboflavin deficient diet had no effect upon the onset of coma and collapse with conditions similar to those in adrenalectomized animals.—R. MARSHALL.

MCERLEAN, B. A. (1952). **The effect of parenteral injection of vitamin B_{12} concentrate on growing swine.**—*Irish vet. J.* **6,** 311-314. [Author's summary modified.] 2582

In young pigs fed a diet deficient in animal protein the intramuscular injection of a vitamin B_{12} concentrate at the rate of 20 μg. per week for seven weeks and 40 μg. per week for a further six weeks failed to accelerate growth. Reasons for the failure were discussed.

AUBERT, A. (1950). L'action de la vitamine B.12 dans une guérison de gastro-entérite infectieuse du chien. **[Vitamin B_{12} in treatment of gastro-enteritis in dogs.]**—*Rev. Path. comp.* **50,** 525. 2583

Gastro-enteritis in a dog was treated by administration of two doses of 0·5 g. streptomycin *per os* and 1 ampoule vitamin B_{12} intramuscularly, after which the temperature and mouth odour returned to normal. One further ampoule of vitamin B_{12} was given on each of the following three days. The author noted a curative and sedative action of the vitamin.

—CHARLOTTE M. WOOD.

ANON. (1951). **Variable response to dietary deficiencies in chickens.**—*Nutr. Rev.* **9,** 209-211. 2584

Two strains of White Leghorn hens were produced which differed in susceptibility to riboflavin deficiency and it was postulated that genetic factors which controlled utilization of this vitamin were involved. Attempts to establish a strain having a low riboflavin requirement indicated that the characteristic which was being selected was high growth rate rather than a specific resistance to riboflavin deficiency. Variations in the hatchability of fertilized eggs from different hens on a diet deficient in vitamin B_{12} were observed. Recent work indicates that these differences may not be related to variations in the requirement of vitamin B_{12} but to variations in the utilization not only of vitamin B_{12} but also of widely different nutrients such as riboflavin and manganese. Further investigation is required before any definite conclusions can be drawn as to the inheritance of susceptibility to a dietary deficiency.

—E. M. CRUICKSHANK.

ANON. (1951). **Vitamin requirements of germ-free chicks.**—*Nutr. Rev.* **9,** 245-247. 2585

The intestinal flora is not essential to life, since germ-free chicks were reared through one complete life cycle into the second generation. The diet used was only partially purified and contained liver powder and yeast extracts, therefore it was not clear whether nutritional factors other than the known vitamins were essential for growth in these conditions. This point was studied on germ-free and non-sterile control chicks using purified diets containing casein, gelatin starch, minerals, and generous amounts of the known essential vitamins except vitamin B_{12}. Up to four weeks of age, growth was similar in the two groups, which indicated that the intestinal flora had not contributed any factor which promoted or depressed growth in the host animal. Haemoglobin, haematocrit, and total red blood corpuscle values were similar in both groups, but the germ-free chicks had a significantly lower white cell count. The caeca of the latter contained significant amounts of ascorbic acid, riboflavin, folic acid and panto-

thenic acid. Only the last two vitamins were lower in amount than in the caeca of control chicks. This finding invalidates the theory that the caecal flora synthesizes vitamins which are utilized by the host. It appears that no unidentified vitamins are required by the chick up to four weeks, but vitamin B_{12}, not provided as a supplement in these experiments, is essential for early growth. This and possibly other factors may have been supplied by the dietary casein and particularly by the eggs from which the chicks hatched. Hence still more critical studies are required to prove that the intestinal flora do not contribute to the nutrition of the host, but the difficulties involved in conducting these are very considerable.—E. M. CRUICKSHANK.

SCHEID, H. E., ANDREWS, M. M. & SCHWEIGERT, B. S. (1951). **Liver storage of vitamin B_{12} by the rat.**—*Proc. Soc. exp. Biol., N.Y.* **78,** 558-560. **2586**

In the rat, the ratio of liver weight to body weight varies with vitamin B_{12} intake, which is also reflected by the amount stored in the liver.
—JOHN SEAMER.

HAUSMANN, K. & MULLI, K. (1952). **The haemopoietic effect of vitamin B_{12} prepared from fish.**—*Lancet.* **262,** 185-188. [Authors' summary copied *verbatim.*] **2587**

Cobalt-containing red pigments with high microbiological vitamin-B_{12} activity were prepared from fish solubles. When they were administered in parenteral doses equivalent to 100 and 120 μg. of vitamin B_{12}, no haemopoietic effect was induced in four cases of pernicious anaemia in relapse. After being treated with potassium cyanide for eight days the red pigments became completely soluble in butanol and yielded the absorption spectra of vitamin B_{12}. The administration of 50 and 60 μg. of vitamin B_{12} from this preparation produced excellent clinical response. It is concluded that the haemopoietically inactive red pigments are peptide conjugates of vitamin B_{12} which can be utilised for the growth of lactic-acid bacteria but not in the intermediate metabolism of patients with pernicious anaemia, and that treatment with potassium cyanide releases vitamin B_{12} from peptide linkage.

RAZZA, F. (1949). L'osteomalacia bovina in Tripolitania. Osservazioni cliniche sperimentali. **[Osteomalacia in cattle in Tripolitania.]**—*Riv. Medi. Vet. Zootec. Parma.* **1,** 173-192. **2588**

Qualitative, rather than quantitative nutritional deficiences caused a serious osteomalacia in cattle in Tripolitania.

Satisfactory results were claimed when the animals were treated with adrenalin.
—M. BERTANI.

SANDSTEDT, H., DYRENDAHL, I. & HJALMARS, K. (1951). Om förebyggande manganbehandling hos nötkreatur. **[Prophylactic treatment of cattle with manganese for acetonaemia.]** —*Nord. Vet.-Med.* **3,** 342-349. [In Swedish.] **2589**

Fifty-three samples of hay from farms having a high incidence of acetonemia in high-yielding cows in 1947-50 averaged 29 p.p.m. manganese as compared with 50 p.p.m. considered normal. Mn values varied widely from farm to farm in the same year, and on the same farms from year to year. Hay from well-limed pastures was particularly deficient in Mn. Considerable improvement in milk yield and butter fat levels followed the addition of 0·5–2·0 g. $MnSO_4$ to the ration for minimum periods of 14 days. Prophylactic dosage (638 cows) consisted of 0·25 g. Mn, representing 1% of the mineral supplement, and gave 80% control of acetonemia. Conditions of infertility and bone dystrophias in animals after summer pasturage were also ameliorated by the treatment.
—K. J. SINCLAIR.

SHAW, J. C., HATZIOLOS, B. C. & CHUNG, A. C. (1951). **Studies on ketosis in dairy cattle. XV: Response to treatment with cortisone and ACTH.**—*Science.* **114,** 574-576. **2590**

Cows with "spontaneous ketosis" had increased blood glucose, falling ketone-body levels and improved appetite after treatment with cortisone or adrenocorticotrophic hormone.
—P. H. HERBERT.

LIEBISCH, H. (1948). Ätiologische und histologische Untersuchungen über das enzootische Myxödem der neugeborenen Ferkel. **[Aetiology and histology of enzootic myxoedema in new-born piglets.]**—*Wien. tierärztl. Mschr.* **35,** 193-198 & 249-263. **2591**

A detailed account of hypothyroidism in pigs, taking the form of prolonged gestation in sows and stillbirth or neonatal mortality in piglets. Great losses from the disease have been sustained in many parts of Austria. Piglets born alive are cretinous in appearance and behaviour and have a typical thick neck owing more to a thickening of the skin of the neck than to enlargement of the thyroid gland.

The nature of the disease can be readily detected by histological examination of the thyroid gland. It is in a state of secretory inactivity, with proliferated acinous cells and without any colloid.

The disease is preventable by giving pregnant sows iodine in any convenient form.

—J. EDWARDS.

SCOTT, M. L. (1951). **Studies on the enlarged hock disorder in turkeys. 2. Factors affecting the excretion and retention of creatine by young poults. 3. Evidence of the detrimental effect of fish liver oil and the beneficial effect of dried brewers' yeast and other materials.** —*Poult. Sci.* **30,** 839-845 & 846-855. [Author's summaries slightly modified.] 2592

I. Poults receiving the basal diet or this diet supplemented with creatine or its precursors suffer from a creatinuria which is especially severe at two weeks of age. The period of greatest incidence of enlarged hocks coincides with the period of greatest creatinuria.

The creatinuria and the enlarged hock disorder were prevented by administration of inositol and/or *p*-aminobenzoic acid but not by vitamin E or certain derivatives of vitamin E. The effects of inositol and *p*-aminobenzoic acid appear to be indirect, through stimulation of certain intestinal micro-organisms to synthesize an unknown required factor or factors.

Addition of a methylating agent, betaine, to the diet caused an increase in creatine content of the leg muscles of poults receiving either the basal diet or this diet supplemented with glycine.

II. The addition of fish liver oil to the diet of poults produced a marked increase in incidence of the enlarged hock disorder. This discovery, together with the earlier findings that in poults with enlarged hocks there is a severe creatinuria, strongly indicates that the enlarged hock disorder is the counterpart in turkeys of encephalomalacia and exudative diathesis in chicks and of muscular dystrophy in rabbits and g. pigs; the disorder in turkeys appears to be a form of nutritional muscular dystrophy.

Vitamin E, the primary deficiency in cases of encephalomalacia in chicks and muscular dystrophy in mammals, had little or no effect upon the enlarged hock disorder in turkeys under the experimental conditions used, but dried brewers' yeast, a source of a water-soluble factor which has been postulated to be required in addition to vitamin E for prevention of muscular dystrophy in rabbits, was found to be very effective in preventing the enlarged hock disorder even in the presence of fish liver oil.

Supplementary betaine, in addition to the choline present in the basal diet at the level recommended by the National Research Council, increased the levels of muscle creatine; addition of fish liver oil caused a marked decrease in creatine content of the leg muscles of poults under these conditions.

In general, the presence of an antibiotic in the diet had a beneficial effect upon the enlarged hock disorder.

The possible role of the intestinal micro-organisms of the poult in the prevention of enlarged hocks has been discussed.

See also absts. **2532** (colostrum); **2628-2629** (vitamin content of swine milk); **2681** (report, Australia); **2685** (report, Jamaica); **2694** (report, U.S.A.).

DISEASES, GENERAL

GOULD, G. N. (1948). **The veterinary surgeon and the dairy herd.**—*J. Fmrs. Cl., Lond.* Pt. 6. 69-74. Discussion pp. 74-84. 2593

The panel scheme for the treatment of the major diseases of dairy cattle, sponsored by the Ministry of Agriculture, National Farmers Union, and the National Veterinary Medical Association, had led to an unprecedented advance in the application of veterinary science on the farm. The American Strain 19 *Brucella abortus* vaccine had proved 97% efficient in immunizing cattle against contagious abortion.

Spectacular results had been obtained in the treatment and control of mastitis by the use of penicillin. Johne's disease was probably more prevalent than is generally realised, and, as cattle over 12 months old have a high degree of resistance, calves should be weaned at birth and kept from pastures grazed by adult stock until they are over this age. The rearing of the calf has a vital influence on its future. The absence of oestrus in heifers is closely associated with subnormal nutrition.

Recent evidence suggests that acetonaemia is associated with nutrition during the later part of gestation and the early part of lactation. The greatest problem for the immediate future is the eradication of TB., which could be accomplished by a really comprehensive scheme in 12-15 years.

In opening the discussion Bruford dealt mainly with calf diseases, pointing out that these did not often kill outright, but tended to leave an animal which at two years old was not efficient either for milk or meat production.

—J. O. L. KING.

BEGG, H. (1950). **Diseases of the stomach of the adult ruminant.**—*Vet. Rec.* **62,** 797-803. Discussion pp. 803-808. 2594

B. discussed in detail (under 18 headings) the symptoms, diagnosis and treatment of digestive disorders in the adult ruminant, treating at considerable length actinobacillosis and traumatic reticulitis. In his opinion the commonest cause of inappetence is acetonaemia; traumatism is responsible for the great majority of primary gastric troubles and gastric dysfunction due to constipation is unlikely to occur, the latter being merely a symptom of some primary condition such as traumatism. Hence there is little place for the use of purgatives, stomachics and tonics. Surgical treatment of traumatic reticulitis was advocated as an exploratory operation rather than a last hope in animals in an advanced state of disease.

In discussion on the paper some speakers expressed the view that primary impaction of the rumen occurs frequently and should be treated with purgatives and stomachics, also that reticulitis when it occurs is usefully treated by raising the forelegs of the cow so that it stands in an attitude in which the position of abdominal viscera is altered.—E. J. H. Ford.

Götze, R. (1950). Aus dem Gebiete der Rinderchirurgie. **[Surgery of cattle.]**—*Dtsch. tierärztl. Wschr.* **57**, 274. 2595

In obstruction of the oesophagus ("choking") the musculature of the organ is usually in spasm and the relief of this is an important preliminary to dislodgement of the obstruction. G. uses novalgin (Bayer) in dosage of 20–40 ml. intravenously. If the bolus cannot be pushed downwards with a probang, it is often possible to ensnare and withdraw it in a stiff wire loop protruding from the end of a flexible tube of a Thygesen embryotome, passed down to the obstruction.

Rumenotomy is now exclusively performed through an incision on the left flank about one and a half inches behind the last rib. There are two main variations: in the first the rumen is sutured to the borders of the abdominal wall opening, and is not released after the intra-ruminal procedure, and in the second it is merely held in the laparotomy opening by special forceps during the operation and is sewn up and released into the abdominal cavity prior to repair of the wall. The former method is favoured because the risk of septic peritonitis is then very small.—J. Edwards.

Soetisno, R. (1951). Pertjobaan membrantas penjakit kulit pada sapi di ketjamatan Bululawang, Kabupaten Malang. **[Control of skin-diseases among cattle in the subdistrict Bululawang, Malang-Regency.]** — *Hemera Zoa.* **58**, 228-253. [English summary.] 2596

A clinical account of the treatment of skin diseases using certain local crude products, lime, cocoanut oil etc.; and daily bathing with infusion of the leaves of *Ceiba petranda, Cassia abata,* or *Vitus trifolia,* these serving as a soap substitute.—C. A. van Dorssen.

Jamieson, S. (1950). **Recent investigations into certain diseases of sheep.**—*Vet. Rec.* **62**, 772-774. Discussion pp. 780-785. 2597

Vegetative endocarditis caused by *Streptococcus faecalis* occurs in lambs at the ages of 6–8 weeks and, less commonly, in younger animals; no effective treatment has been found. The organism also causes fatal pneumonia in sheep.

Blackleg caused by *Clostridium oedematiens* occurs chiefly in lambs following castration and docking, and ewe lambs are susceptible to the disease. The lesion is free from crepitation and incision reveals a bright red muscle surrounded by clear gelatinous exudate. J. considers that the disease follows activation by local trauma of spores which are already present in the tissue. Big-head in rams, caused by *Cl. oedematiens,* has been encountered in Scotland.

Knowledge of enterotoxaemias is still far from complete.—G. B. S. Heath.

Hughes, L. E. (1950). **Some observations on disease in hill and lowland flocks.**—*Vet. Rec.* **62**, 774-777. Discussion pp. 780-785. 2598

H. dealt with sheep farming in Wales. He believes that methods of husbandry are of paramount importance in the cause of disease in sheep and quoted figures to show that lowland flocks tend to lose more sheep from disease than do hill flocks; he ascribed this to differences in management, and pointed out that tick pyaemia is the only disease of hill sheep which is contracted on the mountain itself, the other diseases to which hill sheep are subject occurring only when they are brought down to lowland pastures. The necessity for further investigation of enterotoxaemias was stressed.

—G. B. S. Heath.

Doyle, L. P. (1950). **Some important swine diseases.**—*Canad. J. comp. Med.* **14**, 225-229. [French summary.] 2599

Transmissible gastro-enteritis of swine was shown in Indiana to be caused by a filtrable agent [*V.B.* **17**, 1137]. Mortality from this disease among piglets may be 90% and is usually *nil* in older pigs. Swine dysentery is believed to be caused by a vibrio. Healthy pigs fed a pure culture of the organism developed the disease. Pigs of all ages are affected. A third type of enteritis was discussed which was previously believed to have been due to *Salmonella.* At the present time nutritional deficiency is con-

sidered to be the principal cause, but cases occur under conditions where it is difficult to believe that deficiencies exist. This is the form in which diphtheritic changes are seen on the mucous membrane of the caeca and colon.

—R. GWATKIN.

SZCZUDLOWSKA, M. (1951). Zaburzenia rozwojowe na tle rozstroju regulacyjnego przysadki mózgowej u psa. **[Pituitary disorders in the dog.]**—*Med. weteryn.* **7,** 308-311. [Russian summary.] **2600**

S. differentiated three manifestations of pituitary disorders in dogs:— dwarfism, gigantism and maldevelopment of the sex organs associated with dystrophia adiposo genitalis. He discussed the nature of these diseases.

—JOHN R. MITCHELL.

SIGNOL, J. (1951). Mal vertébral des bovins. **[Osteomyelitis of the vertebrae in cattle.]**—*Rev. Méd. vét. Lyon et Toulouse.* **102,** 282-286. **2601**

A detailed account is given of the clinical course of disease in a four-year-old ox, found to have a necrotic suppurative lesion of the body of the fifth lumbar vertebra, encroaching on the fourth body by way of the intervertebral disc. No bacteriological examination was made, but no tuberculous lesions were seen elsewhere in the carcass, and it was suggested that the lesion may have been secondary to an attack of F. & M. disease from which the animal had recovered seven months previously. [See PRIOUZEAU, M. *V.B.* **17,** 2356.]—E. COTCHIN.

ROWLANDS, W. T. (1950). **"Breid" and the complexity of its nature.**—*Vet. Rec.* **62,** 777-778. Discussion pp. 780-785. **2602**

"Breid" is a local name used in Wales for any disease of sheep in which symptoms of central nervous system dysfunction are prominent. It has been shown to include: tick pyaemia, louping-ill, swayback, cortical cerebellar atrophy, and "gid" ("sturdy").

—G. B. S. HEATH.

KAWASHIMA, H., IGA, M., ISHII, F. & EMOTO, O. (1949). **[A new epizootic disease of swine in Tokyo.]**—*Exp. Rep. Gov. Exp. St. An. Hyg. Tokyo.* No. 20. **2603**

From winter to spring in 1943, a new disease occurred epizootically among the pigs in Tokyo districts, with about 70% mortality.

The disease was first manifested by pyrexia and malaise with vomiting and constipation. In the acute form, death occurred with 2–5 days, but some animals recovered from severe attacks and the disease became chronic.

Fibrinous pleuro-pneumonia was present P.M. Bacteriological examinations yielded negative findings.

Histological examination of the central nervous system revealed non-purulent meningitis in the brain and spinal cord, in some cases being more prominent in the former. The characteristic lesions in the C.N.S. were, however, perivascular infiltration with mononuclear cells in varying proportion and proliferation of glial cells. Phagocytosed fat granules were present in the adventitia of blood vessels.

There were degenerative changes in the testicle.—KOGI SAITO.

COLLET, P. (1950). Polygangrène aiguë symmétrique des extrémités chez une chienne. **[Gangrene of the extremities in a bitch.]**—*Bull. Soc. Sci. vét. Lyon.* **52,** 16-26. **2604**

A clinical account of gangrene of the extremities of three legs in a bitch. No explanation for its occurrence was found.

—G. V. LAUGIER.

HICKMAN, J., EDWARDS, J. E. & MANN, F. C. (1949). **Venous anomalies in a dog. I. Absence of the portal vein. II. Continuity of lower part of inferior vena cava with the azygos vein.**—*Anat. Rec.* **104,** 137-146. [Authors' summary slightly modified.] **2605**

Venous anomalies in a dog were described. These may be summarized as follows:— (1) The lower portion of the inferior vena cava and the azygos vein were confluent. (2) The portal vein was absent. The blood from the abdominal organs collected into a common venous trunk which in turn drained into the major systemic vein of the abdomen. (3) The inferior vena cava above the liver was narrow and was merely a common hepatic vein. (4) Blood to the liver was supplied solely by the hepatic artery. (5) There had evidently been no disturbance of hepatic function resulting from the anomalous blood supply to the liver.

KRABBE, A. (1949). **Urolithiasis in dogs and cats.**—*Vet. Rec.* **61,** 751-755. Discussion pp. 755-759. **2606**

A comprehensive paper covering 15 years' experience at the Royal Veterinary College, Copenhagen. Urinary calculi were found in 0·6% of dogs and sediment formation in 1% of cats. No calculi were recorded in cats. Surgical treatment was described. There was recurrence of calculi in the bladder in only a few cases, but urethral calculi tended to recur. Most of the calculi were composed of magnesium-ammonium phosphate. Six consisted of calcium oxalate, one of uric acid, and one of cystine. Treatment was directed towards control of in-

fection which had usually initiated stone formation.—G. V. LAUGIER.

SCHLEGEL, J. (1951). La réaction tissulaire dans l'emphysème sous-cutané prolongé chez le lapin. **[Reactions in rabbit tissues to subcutaneous emphysema.]**—*Schweiz. Z. Path. Bakt.* **14,** 331-334. [In French. English, German and Italian summaries. Abst. from English summary.] **2607**

An air bubble in the subcutaneous tissue of rabbits was maintained for 6 weeks and at the same time the reticulo-endothelial system was impregnated with a vital dye. The cells immediately lining the air bubble were of the histiocyte and not of the mesothelial type.

THOMAS, R. J., JORDAN, F. T. W. & BLAXLAND, J D. (1952). **A vesicular dermatitis in poultry resembling "sod disease".**—*Vet. Rec.* **64,** 223-224. [Authors' summary copied *verbatim.*] **2608**

An outbreak of vesicular dermatitis affecting the feet of cockerels is described. The lesions resembled those of "sod disease" as reported by American workers. There was no mortality and affected fowls recovered after 10 to 14 days. The condition was not transmissible and the cause is unknown. [Clinically the disease resembles photosentitization as described by Cassamagnaghi (*V.B.* **22,** 1125).]

LOSNER, S. & VOLK, B. W. (1952). **The effect of suboptimal concentrations of anticoagulant solutions upon the clotting time of normal and hypoprothrombinemic human and dog blood.**—*Amer. J. med. Sci.* **223,** 75-87. [Authors' summary slightly modified.] **2609**

Addition of suboptimal amounts of sodium citrate to normal blood of human beings and dogs produced clotting times characteristic of the species and determined by the amount of anticoagulant solution. Addition of suboptimal amounts of sodium citrate to hypoprothrombinemic blood of human beings and dogs yields markedly prolonged clotting times varying synchronously with the respective prothrombin level. The parallelism of the prothrombin level and the amount of sodium citrate necessary to prevent or delay coagulation of blood supports the hypothesis previously advanced by others that sodium citrate unites with prothrombin. Addition of suboptimal amounts of sodium oxalate to hypothrombinemic blood of human beings and dogs does not furnish notably different results as compared to those obtained with normal blood of these species. Addition of suboptimal amounts of a mixture of equal parts of sodium citrate and sodium oxalate to hypoprothrombinemic blood of human beings and dogs yields moderately prolonged clotting times as compared to those obtained with normal blood.

See also abst. **2696** (book, poultry diseases).

SAUNDERS, L. Z. (1951). **Studies in animal neuropathology and ophthalmic pathology.**—*Thesis, Cornell.* pp. 107. **2610**

Part I is a study of hereditary cerebellar ataxia in Jersey calves. The symptoms are present at birth or appear during the first week of life. Death ensues one or two weeks after symptoms appear. Pathologically there is an anomaly of the cerebellum and midbrain, consisting of a lack of development of the axon cylinders and myelin sheaths of the white matter.

Part II deals with a study of congenital blindness in a group of grade Jersey calves due to a multiple eye defect consisting of irideremia [absence of the iris], microphakia, ectopia lentis and cataract.

Part III is a study of congenital blindness in pure-bred blue merle Collie dogs due to a congenital anomaly of the retina and optic nerves. This was interpreted as hypoplasia, upon which an ante-natal degeneration was superimposed in some of the cases.

Part IV concerns the significance of cerebral vascular siderosis in horses. The condition was found in the brains of 15 out of 24 normal horses over six years of age. S. concludes that since it is so commonly found in apparently healthy animals, its presence would have little or no diagnostic significance in animals suspected of having brain disease.

—H. L. GILMAN.

GALE, J. C. (1951). **Electron microscope studies of collagen from normal and diseased tissues.**—*Amer. J. Path.* **27,** 455-475. **2611**

Collagen fibrils isolated both from normal human tissues, and from a variety of tumorous lesions varied in size, the largest being of 2,300 Å in width. No explanation of these variations is given.—F. R. HARRIS.

POISONS AND POISONING

BECMEUR, LAMOTTE, MASSOTTE & ROUSSON, (1951). Darmous et fluoroses. **[Darmous and fluorine poisoning.]**—*Maroc. méd.* **30,** 490-496. **2612**

Darmous is the name given in Morocco to fluorine intoxication in cattle, sheep and human

beings. Calcium fluoride produces osteopetrosis, but the sodium salt causes osteoporosis. Fluorapatite [a mineral containing calcium fluoride and calcium phosphate] is a source of fluorine poisoning, but the Moroccan wells have not an abnormally high fluorine content. Fluorides from dust in the neighbourhood of phosphate industrial processes are the important cause, but soluble fluorides must also be considered as possible causes.—F. R. HARRIS.

LEWIS, D. (1951). **The metabolism of nitrate and nitrite in the sheep. I. The reduction of nitrate in the rumen of the sheep.**—*Biochem. J.* **48**, 175-180. [Author's summary copied *verbatim*.] **2613**

Nitrate introduced into the rumen of the sheep is reduced to ammonia. Nitrite is an intermediate in this reaction and may accumulate under certain conditions and lead to a partial conversion of blood haemoglobin to methaemoglobin. Sodium nitrate (25 g.) or sodium nitrite (10 g.) placed in the rumen, or 2 g. sodium nitrite injected intravenously, result in a methaemoglobinaemia corresponding to 60% conversion of the total haemoglobin.

ANON. (1951). Geilsiekte. **[Hydrocyanic acid poisoning.]** — *Fmg. S. Afr.* **26**, 331 & 346. **2614**

A general note written for farmers giving some details of plants in South Africa that contain cyanogenetic glycosides [glycoside being the general name for this group of compounds; glucoside being the more specific name for those glycosides which contain glucose.].

—R. A. HUCK.

GRAU & WOJTEK. (1950). Über Schadenfälle bei Schafbadungen mit Hexachlorcyclohexan. **[Poisoning in sheep after dipping in benzene hexachloride.]**—*Tierärztl. Umsch.* **5**, 119-124. **2615**

An inflammation of the middle ear with ataxia and a high mortality was observed a few days after sheep were dipped. For subsequent dipping the temperature of the bath was 35°C.; no ear disease developed in the animals so treated.—R. MARSHALL.

PRIOUZEAU, M. (1951). Intoxication par la ciguë aquatique. **[Poisoning of cattle, pigs and horses by water hemlock** (*Cicuta virosa*).] —*Rec. Méd. vét.* **127**, 483-488. **2616**

P. described the illness of a bullock which died within three min. of eating water hemlock roots contained in mud from a recently cleaned out drinking place, and other cattle cases in which the ill-effects responded to treatment, cures following in 2–4 days.

Of two cases of similar poisoning in horses, he described one in detail and compared symptoms with those of meningo-encephalitis.

He observed no fatal case of poisoning in pigs, although such roots were eaten. If taken in quantity, ill-effects were cured in 2–4 days.

—G. DAVIES.

PARKER, M. W., HENDRICKS, S. B., BORTHWICK, H. A. & JENNER, C. E. (1952). **Photoperiodic responses of plants and animals.** [Correspondence.]—*Nature, Lond.* **169**, 242-243. **2617**

Recently published work was discussed in relation to the region or organ of perception to light rays in plants and animals. Previous observations on higher animals point to the central nervous system, accessible through the eye, as the perceptive tissue. The porphyrin found by Klüver in the central nervous system of birds and mammals may be the significant pigment concerned as it is an active photodynamic agent. The relative effectiveness of the light and dark periods in relation to reproduction is not known.

—K. J. SINCLAIR.

See also abst. 2681-2682 (reports, Australia).

PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease)

WILLIAMS, T. I. [Deputy Editor of Endeavour] (1947). **Drugs from plants.** pp. 119. London: Sigma Books Ltd. 6s. **2618**

This little book, written in popular style, gives a short account of seven drugs:— quinine, hashish, digitalis, penicillin, ergot, opium and cocaine, and mentions briefly others, all obtained from plants. The historical as well as the modern medical and chemical aspects are dealt with and there are 12 pages of illustrations.

—E.M.J.

MAY, J. R. & MORLEY, C. W. (1952). **The routine testing of the sensitivity of bacteria to antibiotics.**—*Lancet.* **262**, 636-638. [Authors' summary copied *verbatim*.] **2619**

A method for the routine testing of the sensitivity of bacteria to antibiotics is described. The concentrations of the antibiotics against which the organisms are tested are designed to indicate the likely response of the patient to each substance in systemic, urinary, or "local" infections. The findings for several common

organisms during eleven months' use of the test are given.

BLISS, E. A., WORTH, P. T. & LONG, P. H. (1952). **Studies of combinations of antibiotics *in vitro* and in experimental infections in mice.**—*Johns Hopk. Hosp. Bull.* **90,** 149-169. [Authors' summary copied *verbatim.*] 2620

The antibacterial activity of two-fold combinations of penicillin, aureomycin, chloromycetin, terramycin and streptomycin, and occasionally of polymyxin D, were tested *in vitro* and *in vivo*. *In vitro,* the minimal inhibitory concentrations of the combinations, and their effects on multiplication of bacteria, were determined. Eighteen strains of bacteria were used. *In vivo,* studies were made of the therapeutic effects of the combinations in infections induced in mice with one strain each of pneumococcus, haemolytic streptococcus and *Klebsiella pneumoniae*. Effects of the combinations varied with the method of testing, the test organism and, most importantly, with the concentrations of the two components. The greater the concentration of the agents the less was the benefit derived from combining them. Synergism was demonstrated more frequently than antagonism, but most of the reactions fell between these two extremes, the effects of the combinations being merely additive or no different from those of the agents when used separately. Combinations which were predominantly synergistic were those of penicillin with streptomycin and of aureomycin or terramycin with chloromycetin. Antagonism was exhibited between chloromycetin and penicillin or streptomycin, *in vivo,* and by one or the other of the methods, *in vitro*. Aureomycin, also, acted antagonistically towards penicillin in the growth studies and in the experimental streptococcal infection. In the pneumonococcal and klebsiellar infections, however, these two agents were synergistic.

AUERBACH, S. H., MIMS, O. M. & GOODPASTURE, E. W. (1952). **Pulmonary fibrosis secondary to pneumonia.**—*Amer. J. Path.* **28,** 69-87. [Authors' summary modified.] 2621

Pulmonary fibrosis secondary to pneumonia was found in 38 (12 per cent) of 307 necropsies on human beings performed between 1946 and 1950. Comparable series of 100 cases from each of the years 1940 and 1930 showed 7 and 5 per cent, respectively. The evidence suggests that the use of antibacterial agents contributes to a rising incidence of organization of pulmonary exudates, and that small areas of fibrosis may be the consequence of viral pneumonia.

LEIPER, J. W. G. (1951). **A new approach to phenothiazine therapy in sheep.**—*Vet. Rec.* **63,** 885-889. [Author's summary slightly modified.] 2622

A measure of control of gastro-intestinal nematodes of lambs was accomplished by dosing ewes with 30 g. phenothiazine 10 days prior to commencement of lambing and continuing with small daily amounts of phenothiazine in the food for a period of nine weeks. At five and a half months old the lambs from the treated ewes gained an average of 7 lb. more than the lambs from the untreated ewes. Blow-fly strike of the tail did not occur in the lambs from the dosed ewes, whereas six out of 22 lambs in the control flock were struck on the tail. When weight gains of the unstruck control lambs were compared with the lambs from the dosed ewes there was still an average weight increase of 5·7 lb. in favour of this method of phenothiazine therapy.

WILSON, A. (1949). **The pharmacological basis of modern anaesthesia.**—*Proc. R. Soc. Med.* **42,** 522-524. 2623

Anaesthetic drugs may be selectively absorbed by cells of the central nervous system, interfering with glucose utilization and the production of acetylcholine in metabolic processess of the brain, the greater blood flow in the brain contributing to the selectivity of the drug for cerebral tissue. The interference with brain metabolism is temporary and reversible except when the drug is used in high concentration. The action of short-acting barbiturates may be prolonged by certain types of liver damage, by antihistamine substances, and by morphine or phenacetin.—F. R. HARRIS.

FLINT, M. H., GILLIES, H. & REID, D. A. C. (1952). **Local use of chloramphenicol in wound infections.** — *Lancet.* **262,** 541-544. [Authors' summary copied *verbatim.*] 2624

Local applications of 5% chloramphenicol (chloromycetin), either as a powder in lactose or as a solution in propylene glycol, were used to obtain a rapid bacterial clearance of a wide variety of wounds infected by penicillin-resistant or insensitive organisms [in human beings]. The chief organisms encountered were *Ps. pyocyanea, Proteus vulgaris,* and penicillin-resistant and streptomycin-resistant *Staph. aureus*. All but one case were sensitive to 2·5% chloramphenicol. No organism became more resistant during or after treatment. The bacterial clearance in thirty cases was obtained in an average time of 4 or 5 days; in many cases the time was shorter, especially in cases treated with

chloramphenicol in propylene glycol, which seemed more effective than a powder containing the same concentration of chloramphenicol. No case failed to respond either clinically or bacteriologically to this local therapy, although twenty-eight out of thirty cases had failed to respond appreciably to alternative local treatment and/or systemic chemotherapy. After local chloramphenicol many responded dramatically and all showed improved wound healing. No local or generalized allergic phenomena or deficiency of vitamin-B complex developed in any of the cases treated. Local chloramphenicol in penicillin-insensitive wound infection is a most useful adjunct in surgery, and there is a wide scope for its future use.

See also abstsb. **2331** (mammary infections); **2334** (penicillin); **2339** (mastitis in Australia); **2363-2364** (cortisone in TB.); **2365** (nisin); **2372** (modification by cortisone of the tuberculin reaction); **2377** (glanders); **2387** (penicillin in fowl coryza); **2431** (bactericidal action of ultra-violet light); **2435** (trypanosomiasis); **2443-2444** (trichomoniasis); **2446** (blackhead); **2455** (F. & M. disease); **2523** (effect of methiolate on viruses); **2524** (effect of acridines on viruses); **2529** (effect of cortisone on serum sickness in rabbits); **2562-2563** (antibiotics); **2615** (benzene hexachloride poisoning); **2697** (book, fluorine and its compounds).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

IRVING, L. (1950). **Measurement of some physiological reactions to Arctic conditions.** —*Ann. N.Y. Acad. Sci.* **51**, 1045-1050. **2625**

The establishment of an Arctic research laboratory at Point Barrow, Alaska, was described. A preliminary study of ground squirrels, *Citellus* sp. revealed that the animals were active for the three summer months and hibernated for eight months apparently without food stores. Within an external temperature range of −30° to +30°C. their body temperature remained very constant at 38°C. but rose steadily when the external temperature rose above 40°C. However, heat appears to be well tolerated by arctic animals.—J. A. NICHOLSON.

THOMSON, M. L. (1951). **The cause of changes in sweating rate after ultra-violet radiation.** —*J. Physiol.* **112**, 31-42. [Author's summary slightly modified.] **2626**

The vesicular rash found in many subjects after ultra-violet radiation provided evidence that blockage of sweat gland ducts was at least partly responsible for the diminished sweating which followed the radiation. Occlusion of a proportion of the sweat-gland ducts in radiated skin was confirmed histologically. Blockage of sweat-gland ducts, however, appears not to be the sole factor responsible for the decreased sweating. Indirect evidence, in fact, suggests that the secretion itself is reduced. Since it is unlikely that the ultra-violet rays have penetrated to the sweat glands and impaired their function, it is suggested that the reduced sweat secretion is brought about by toxins which have diffused from the injured epidermis.

The skin injury produced by mustard oil also caused a fall in sweating rate similar in extent and duration to that produced by U.V. radiation. The slight reduction of sweating rate caused by locally applied massive doses of histamine suggested that the above effect of U.V. radiation and mustard oil was not mediated through the release of an H-like substance.

Acetylcholine and acetyl-β-methylcholine locally applied did not cause a return to normal of the sweating rate after radiation.

The skin of a negro showed no significant alteration in sweating rate after a dose of radiation which caused marked reduction of sweating in a white skin.

TIDWELL, A. L. & FLETCHER, J. L. (1951). **The effect of summer environment on the body temperature and respiration rate of swine.**—*J. Anim. Sci.* **10**, 523-532. **2627**

Exposure of eight pigs of two different breeds to summer sunshine for 15 or 30 min. caused a rise in their body temperature and accelerated respiration.—J. T. DONE.

HEIDEBRECHT, A. A., MACVICAR, R., ROSS, O. B. & WHITEHAIR, C. K. (1951). **Composition of swine milk. I. Major constituents and carotene, vitamin A and vitamin C.** —*J. Nutrit.* **44**, 43-50. **2628**

DAVIS, V. E., HEIDEBRECHT, A. A., MACVICAR, R., ROSS, O. B. & WHITEHAIR, C. K. (1951). **The composition of swine milk. II. Thiamine, riboflavin, niacin and pantothenic acid content.**—*Ibid.* 17-27. **2629**

I. The authors tested colostrum for vitamins A and C and milk for these vitamins and also for solids, solids-not-fat, fat, etc. There was little change in the average values of solids, solids-not-fat, fat etc. of milk during lactation. Vitamin A fell from 132 μg. per 100 ml. in colostrum to 19 μg. on the 55th day, and ascorbic acid from 19 mg. per 100 ml. to 11 mg. The only variable factor which affected these values was vitamin A or carotene in the diet which increased the vitamin A in colostrum and milk.

II. The average values of these vitamins of the B-complex from all samples of colostrum obtained from 35 sows and gilts were: thiamine 0·6, riboflavin 5·0, niacin 1·7 and pantothenic acid 0·7 μg. per ml., respectively. The thiamine

content was unchanged during lactation, the level of riboflavin fell somewhat and the values of niacin and pantothenic acid rose. No relationship was established with age, breed or diet.—R. MARSHALL.

ALEXANDER, F. (1952). **The effects of some humoral agents on the horse ileum.**—*Brit. J. Pharmacol.* **7,** 25-32. [Authors' summary modified.] **2630**

Ileal motility was studied in three ponies with Biebl loops and one with a Thiry-Vella loop. The movements of the exteriorized ileum in the recently fed pony with a Biebl loop comprised a mixture of strong slow contractions and quicker rhythmic contractions. In the fasting animal the rhythmic contractions predominated. The Thiry-Vella fistula indicated only rhythmic contractions. Adrenaline inhibited, and carbamylcholine usually increased, ileal motility in the living animal. Posterior pituitary extract diminished contractions in both Biebl and Thiry-Vella loops and caused a prolonged fall in ileal temperature, this being always associated with inhibition of motility. It is suggested that intestinal motility in the horse is greatly influenced by drugs which affect intestinal blood flow.

DE GIROLAMO, A. (1950). Rilievi comparativi sulla morfologia e sulla lunghezza dell'intestino fra Bos taurus e Bos bubalus. [**Comparative studies of the intestine of cattle and buffaloes.**]—*Nuova Vet.* **26,** 18-23. **2631**

Measurements of the total length of the intestine of cattle and domestic buffaloes showed that there is a significant difference between the two species. In cattle, the average total length was found to lie between 47 and 50 m. whereas this was between 35 and 37 m. in the buffalo. The difference is mainly due to a difference in length of the small intestine which in cattle averages 40 m. but only 30 m. in buffaloes. In addition to the difference in length, there is also a difference in diameter which is greater in cattle so that the total capacity of the small intestine of buffaloes is considerably less than that of cattle. Although age and the state of development affected the measurements, a fairly close correlation was found to exist between the length of the intestine and the external measurements of height and body length.

—J. A. NICHOLSON.

I. PHILLIPSON, A. T. (1952). **The passage of digesta from the abomasum of sheep.**—*J. Physiol.* **116,** 84-97. **2632**

II. MASSON, M. J. & PHILLIPSON, A. T. (1952). **The composition of the digesta leaving the abomasum of sheep.**—*Ibid.* 98-111. [Authors' summaries copied *verbatim.*] **2633**

I. The quantity of digesta passed from the stomach of one sheep in which flow to the duodenum was permanently exteriorized was found to be 389 and 441 ml./hr. on two separate occasions. The quantity of digesta passed in two sheep in which the flow along the duodenum was temporarily exteriorized by the inflation of a balloon in the duodenum varied from 309 to 413 ml./hr. The inflation of a balloon in the duodenum reduced the outflow of digesta from the abomasum to the duodenum. The reintroduction of digesta into the duodenum temporarily stopped or reduced the passage of digesta from the abomasum. The quantities of digesta passing from a duodenal cannula placed immediately caudal to the pylorus varied from 467 to 1277 ml./hr. with sheep consuming 1125 or 1200 g. of dry food daily when the material collected was not reintroduced into the intestine.

The quantities passed from the duodenum during collections lasting $1\frac{1}{2}$ hr. was influenced by the quality of the food eaten. An increase in the flow of digesta from the abomasum was found after a feed of cereal offals and meals but not after a feed of hay. The flow of digesta from the duodenum was more regular when the sheep was ruminating than when it was otherwise occupied. No relationship was found between the frequency of the movements of the reticulum and the quantities of food passing to the duodenum.

Digesta passes to the duodenum of sheep in gushes at irregular intervals for 17 out of 24 hr. Periods of 15–30 min. between gushes may occur particularly if the sheep has recently consumed hay.

II. The concentration of steam-volatile fatty acids in the digesta leaving the abomasum is 7–20 times less than it is in the rumen. The chloride and dry-matter concentrations, when related to each other, are inversely proportional in the digesta leaving the abomasum. The concentrations of chloride in the contents of the rumen, omasum and abomasum increase in that order. The chloride concentration in the gastric juice obtained from two sheep, one with a Hollander and one with a Pavlov pouch of the abomasum, ranged from 141 to 177 m.equiv./l, the average value being 157 m.equiv./l. The average value for a fasting sheep with a Hollander pouch was 153 m.equiv./l. and the average for the same sheep

during normal feeding was 158 m.equiv./1. The highest acidity of the gastric juice was 117 m.equiv./l. Under normal circumstances the average value obtained from a Hollander pouch of the abomasum was 86 m.equiv./l. Neutral juice or juice with a low acidity was occasionally secreted. Fasting reduced the acidity of the gastric juice. The ratio of gastric juice to omasal contents calculated from the observed concentrations of chloride in the omasal and abomasal contents and in the gastric juice was approximately 2:1 or greater. There is evidence to suppose that absorption of water occurs from the fermented food residues before they enter the abomasum.

GALLEGO GARCÍA, E. (1951). El mielograma normal en la especie porcina. **[Bone marrow biopsy in swine.]**—*An. Fac. Vet., Madrid.* **3,** 129-141. [English, French and German summaries.] **2634**

Differential cell counts were given of single bone-marrow biopsies performed on eight healthy pigs weighing 21–31 kg. Puncture was performed on the third or fourth sternebra using a Booch needle.—J. T. DONE.

GOULD, B. S. & GOLD, N. I. (1951). **Studies on the "alkaline" phosphatase associated with regenerating connective tissue fibers.**—*Arch. Path.* **52,** 413-422. [Authors' conclusions copied *verbatim.*] **2635**

The phosphatase activity which appears so dramatically associated with newly formed fibers in a healing wound is independent of marked changes in the phosphatase level of the blood. Massive amounts of phosphatase applied to wounds of scorbutic animals where fiber formation is poor, and powerful phosphatase inhibitors injected into wounds in rats where fiber formation is rapid, are without influence, indicating a doubtful role for phosphatase in fiber formation. The absence of phosphatase from areas of poor regeneration may be due to the absence of fibers which normally adsorb some phosphatase and concentrate it to the point where it can be visualized histochemically.

WIMSATT, W. A. (1950). **New histological observations on the placenta of the sheep.**—*Amer. J. Anat.* **87,** 391-457. **2636**

Emphasis has been placed on: (1) Structural features that have not been described before: (a) Gross and microscopic development of chorionic areolae, (b) Gross development of chorionic villi, (c) Blood supply of membranous chorion and areolae, (d) Gestational changes in the uterine glands; (2) Features that have been described only inadequately before: (a) Structure of placental barrier, (b) Blood supply of villi, (c) Formation of haematomata; (3) Structures about which there has been general disagreement over interpretation: Nature and significance of the syncytium lining maternal crypts within the placentomes.

The account is profusely illustrated by photographs of whole mounts of villi and areolae and drawings of histological sections.

—G. HALLEY.

VACCARI, F. & ROSSANDA, M. (1952). **Blood glycolysis during the alarm reaction.** [Correspondence.] — *Nature, Lond.* **169,** 327-328. **2637**

Blood glycolytic rate was doubled in the excitement stage and quartered during the depression of the alarm reaction before returning to normal.—JOHN SEAMER.

JUNQUEIRA, L. C., SESSOT, A. & NAHAS, L. (1951). Sur la nature des cellules sécrétantes de la glande parotide. **[The nature of the secretory cells of the parotid gland.]**—*Bull. Microscop. appl.* **1,** 133-135. [English summary slightly modified.] **2638**

Of the parotid glands of ten different mammals studied, none presented histochemical characteristics of purely serous secretory cells. The conclusion drawn from these observations is that the parotid, contrary to the common belief, is not a serous gland.

LANE, N. & DE BODO, R. C. (1952). **Generalized adrenocortical atrophy in hypophysectomized dogs and correlated functional studies.** — *Amer. J. Physiol.* **168,** 1-19. [Authors' summary copied *verbatim.*] **2639**

Structural changes of the adrenal glands and the state of both organic and inorganic metabolism were studied in hypophysectomized dogs. Use of a serial section technique revealed the total absence of pituitary tissue in 14 animals and the presence of a microscopic remnant of either the pars distalis or pars tuberalis in 7 dogs. Functionally, and with regard to the structure of the adrenal glands, the 2 groups were indistinguishable. The adrenal glands constantly exhibited weight reduction and generalized cortical atrophy. Although the zona reticularis and inner zona fasciculata were affected earliest, most severely, and eventually appeared to undergo total atrophy, the zona glomerulosa also became atrophic as evidenced by reduction in cell size, narrowing of cell columns, reduction of cytoplasmic vacuolization, diminished sudanophilia, and an increase in connective tissue, especially

prominent in the most advanced stages. In no instance was there a total atrophy of the zona fasciculata. Even in the most advanced stages of atrophy, the surviving cortical tissue was represented by remnants of both the zona glomerulosa and the outer zona fasciculata. These showed comparable sudanophilia. Carbohydrate and protein metabolism were severely disturbed as indicated by the high degree of sensitivity to the hypoglycemic action of insulin, the resistance to the hyperglycemic action of adrenaline and the inability to withstand fasting. Glomerular filtration rate and effective renal plasma flow were markedly reduced. Despite generalized adrenocortical atrophy, the ability to conserve sodium during severe prolonged salt restriction was unimpaired and the renal mechanism for excretion of intravenously administered potassium salts was essentially normal. However, the ability to excrete an orally administered water load was severely impaired.

See also abstr. **2346** (vibrionic enzymes); **2647** (seasonal variations in food and water intake of Indian cattle).

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

WERNBERG, N. E. (1950). Moderne slagteriteknik. **[Modern slaughter technique.]**—*Maanedsskr. Dyrlaeg.* **61**, 329-345. 2640

A detailed scheme for reorganizing the design and equipment of Danish abattoirs, based on practice in the U.S.A. and in Sweden, special attention being paid to hygiene and economy of operation.—JOHN C. COWNE.

PUSCH, I. (1950). Vergleichende Untersuchungen zur Bestimmung der Wässrigkeit und des Ausblutungsgrades in der Fleischuntersuchung. **[Determination by the meat inspector of water content and the degree of bleeding of the carcass.]**—*LebensmTierarzt.* **1**, 105-109. 2641

A discussion on certain rapid tests used by meat inspectors, dealing with rough tests for the water content of the carcass, the extent to which a carcass has been bled and also the haemoglobin content of the blood.

—H. DE BARTOS-RIVALIER.

LENNARTSSON, T. (1950). Bakteriologisk undersökning av svenska ägg med särskilt avseende på eventuell förekomst av Salmonella-bakterier. **[Bacteriological examination of Swedish eggs, especially for *Salmonella*.]**—*Nord. Vet.-Med.* **2**, 193-203. [English and German summaries.] 2642

Fresh eggs, eggs soiled with faeces and eggs from known sources of salmonella infection were examined bacteriologically. Egg whites were discarded owing to low bacterial content. 8·5% of the yolks of fresh eggs yielded a variable bacterial flora. Soiled eggs were examined fresh and after an interval of $3\frac{1}{2}$–5 weeks' storage at 15°C. The percentage of eggs with yolk infection during the storage period rose from 3% to 16%. The *Proteus* group of organisms predominated. Shells yielded abundant faecal and soil bacteria and washing in tepid water produced no qualitative alteration in shell flora. Salmonella organisms were not recovered, even from eggs from known infected sources.—G .V. LAUGIER.

WRINKLE, C., WEISER, H. H. & WINTER, A. R. (1950). **Bacterial flora of frozen egg products.**—*Food. Res. Ill.* **15**, 91-98 2643

Coliform organisms and Gram-positive cocci predominated. Freezing at —17° to −23°C. reduced but did not eliminate bacteria; pasteurization resulted in 99% reduction in bacterial count.—R. MARSHALL.

ANON. (1951). Den Kgl. Veterinaer- og Landbohøjskoles laboratorium for speciel patologi og terapi og stationaer klinik for større husdyr, medicinsk afdeling. i 25 år, fra 1. April 1923 til 31. Marts 1948. **[Twenty-five years' work at the laboratory for special pathology and therapy and the medical department of the large-animal clinic at the Royal Veterinary and Agricultural College, Copenhagen.]**—*Maanedsskr. Dyrlaeg.* **62**, 47-76. 2644

This laboratory was inaugurated in 1923. It deals with all the pathological and bacteriological work etc. A list is given of the publications of the laboratory during the 25 years under review.—P. SCHAMBYE.

ANON. (1951). **[Outlook of veterinary activities in 1951 in Japan. (Round Table Conference.)]**—*J. Jap. vet. med. Ass.* **4**, 21-28. 2645

Veterinary activity should be more widely extended in the field of animal industry so that increased products of animal origin may be made available for the Japanese people and replace a considerable part of rice as staple food.

Veterinarians should play a more important role in food sanitation and in rabies con-

trol. Veterinary students must be trained more intensively in subjects concerning public health.

All veterinarians, whether government employees or private practitioners, should cooperate in preventive medicine and carry out inoculation and vaccination against infectious diseases.

Artificial insemination is to be developed further under veterinary control.

—S. Sakasegawa.

See also absts. **2358** (viability of tubercle bacilli in sewage); **2391** (*Salmonella* in healthy slaughter animals); **2561** (keeping quality of eggs).

LIVESTOCK HYGIENE

Merlin, P. (1951). L'hydraulique pastorale en A.O.F. **[Water supplies for livestock in French West Africa.]**—*Bull. Serv. Élev. Industr. anim. A.O.F.* **4**, 169-201. Discussion pp. 202-206. **2646**

At a conference at Bamako, French West Africa, the supply of water to vast areas of the territory, either by deep borings, or when feasible, by the sinking of more superficial wells, was discussed.

The result has been encouraging and of inestimable value to the native population, economically and socially, by allowing them to keep a greatly increased number of livestock.

—G. S. Rabagliati.

Mullick, D. N., Murty, V. N. & Kehar, N. D. (1952). **Seasonal variations in the feed and water intake of cattle [in India].**—*J. anim. Sci.* **11**, 42-49. [Authors' summary copied *verbatim.*] **2647**

There seems to be little information on the metabolic behavior of ruminants in the tropics, affecting their general health and production. This investigation was designed to study the influence of seasonal rhythm on the metabolic behavior of different nutrients in cattle.

Observations on the pulse rate, respiration rate, body temperature, body weight, digestibility and water metabolism were recorded on six healthy Kumauni hill steers for summer, autumn, winter and spring seasons extending over a period of 18 months. Mean air temperature and relative humidity also were noted for the whole period of observation. It was found that: (1) The pulse rate, respiration rate and body temperature increased while body weight decreased in the summer months. (2) The amount of water taken and the insensible perspiration was highest in summer, comparatively lower in autumn and spring, and minimum in winter. (3) The dry matter intake varied with the water intake. (4) The urinary output and its specific gravity remained unaltered in all the periods. (5) The ingestion of protein and fat is much lower in summer and autumn than in winter and spring. (6) The amount of digested protein in terms of percentage of T.D.N. is less in summer and autumn months, whereas that of carbohydrate was higher in the summer months and the reverse was the case in winter and autumn. (7) Differences in intake of water, dry matter and nutrients were statistically significant between the seasons. (8) The interrelationship between the different nutrients and environmental conditions has been discussed.

REPRODUCTION AND REPRODUCTIVE DISORDERS

Branton, C., James, C. B., Patrick, T. E. & Newsom, M. H. (1951). **The relationship between certain semen quality tests and fertility and the interrelationship of these tests.**—*J. Dairy Sci.* **34**, 310-316. **2648**

A statistical investigation of 100 semen samples by eight quality tests showed that a combination of tests is necessary for proper evaluation.—E. J. H. Ford.

Jacquet, J. (1951). Recherches sur quelques milieux biologiques de conservation du sperme des taureaux. **[Skim milk as a semen diluent.]**—*Bull. Acad. vét. Fr.* **24**, 429-432. **2649**

J. had used sterilized skim milk as a semen diluent for two years. Its advantages over egg-yolk diluents were described. Higher conception rates were claimed.—G. V. Laugier.

Hancock, J. L. (1952). **Cytological changes in spermatozoa after death.**—*J. Endocrinol.* **8**, No. 2. pp. i-ii of Proceedings. [Only abst. given. Abst. copied *verbatim.*] **2650**

A study of the variations in cytological characteristics of bull spermatozoa before and after death of the cell was reported. The post-mortem changes encountered in the cell were illustrated by electron micrographs and by direct ultra-violet and phase contrast ultra-violet

micrographs. Attention was particularly drawn to the changed structure of the acrosome after death.

The findings were discussed in their relation to recent studies of the structure of the sperm head in the ram and bull. It was pointed out that the appearance of the acrosome after death corresponds closely to that which has previously been described as characteristic of a second head membrane, the galea capitis. It was concluded that the 'acrosome' and 'galea capitis' described by previous workers are identical.

BEATTY, R. A. (1951). **Transplantation of mouse eggs.** [Correspondence.]—*Nature, Lond.* **168,** 995. 2651

Mouse embryos developed successfully to term following transplantation of ova through the cervical opening.—P. H. HERBERT.

GORDON, R. F. & PHILLIPS, J. G. (1951). **Poultry production and progeny trials. Report of the results of the artificial insemination carried out from March to April, 1951.** —*Vet. Rec.* **63,** 503-507. 2652

Owing to Newcastle disease restrictions it was not possible to bring competitors' cockerels to the Trial premises. It was decided to try to produce the necessary pullets by artificial insemination. A semen dilution of 1:2 and a dose of 0·1–0·175 ml. gave an overall fertility of 50·4%. Further dilution and smaller doses gave very disappointing results. On a pen basis fertility in some batches reached 70–80%. The semen from the light breeds gave disappointing results but that may be a reflection on the individuals used rather than on the breeds.

Yields of semen from Rhode Island Red males averaged 2·18 ml. per collection, for Light Sussex males the average was 1·25 ml. and from the light breeds 0·59 ml. With the dilutions stated, six cockerels inseminated 950 pullets each week for four weeks. Fertile eggs were collected two days after insemination. The results indicate the important part played by the female in fertility.—D. LUKE.

BENESCH, F. [Professor of Obstetrics at the Veterinary High School, Vienna.] & WRIGHT, J. G. [Professor of Veterinary Surgery in the University of Liverpool.] (1950). **Veterinary obstetrics, including certain aspects of the physiology and pathology of reproduction in domestic animals.** pp. viii + 459. London: Baillière, Tindall & Cox. 50s. 2653

The original text of Professor Benesch was published in 1933 [*V.B.* **4,** pp. 194-195], and the first edition in English in 1938 under the editorship of Professor Wright.

In this 1950 edition there are two completely new sections, Part I, dealing with normal oestrus, pregnancy, maternal and foetal dystocia, the approach to an obstetrical case and the method of delivery *per vaginam* in the bitch, and Part III, dealing with the methods of delivery by caesarian section. Post-parturient disease conditions are also given detailed consideration and the closing chapters are devoted to many aspects of infertility. Reference has been extended to obstetrics in small animals and in the smaller farm animals.

Part II of this edition consists of a reprint of the eighteen chapters of the first edition.

In preparing this book, the editor has had practical considerations in view throughout and he is to be congratulated on tempering the mass of academic data available with his appreciation of problems as they occur in the field. The result is an informative and highly satisfactory textbook which should prove of the greatest value to students and graduates alike.

The illustrations are excellent and a comprehensive bibliography is included. The presentation and binding are of the high standard associated with Messrs. Baillière, Tindall and Cox.—E. F. LEWIS.

DE NORDIS, S. (1951). Piometra equina, affezione inguaribile. Di un caso particolare considerato istopatologicamente. [**Pyometra in mares.**]—*Nuova Vet.* **27,** 279-287. 2654

A careful clinical description of a nine-year-old mare affected by pyometra, and the unsuccessful treatment of the disease, is given.

After histopathological examination the author classified the changes as a chronic ulcerative endomyometritis with pyometra, and concluded that the degenerative sclerotic changes of the uterus caused incurable sterility.

—M. BERTANI.

DAWSON, F. L. M. (1951). **Studies on catarrhal endometritis in the bovine. I. An introductory clinical survey of the disease group with some bacteriological control.**—*Brit. vet. J.* **107,** 380-391 & 412-426. 2655

A detailed study was made of 88 cases of endometritis occurring from three weeks following parturition. The conditions were classified, on the nature of discharge and the absence or otherwise of oestrus, into three main groups and the value on each group of modes of treatment, including uterine irrigation, the use of sulphonamides by mouth and of hormone treatment were assessed.

In Group I in which there was no oestrous cycle, with copious discharge, mainly pus, 10% of the cases were bacteriologically sterile and prognosis was good. The remainder yielded *C. pyogenes* and here the prognosis was poor, but endocrine treatment plus uterine irrigation (except iodine) were useful.

In Group II in which there was normal oestrous cycle, with scanty muco-purulent discharge, prognosis was good. The group was further subdivided into subgroups where the discharge appeared later following calving or following oestrus.

In Group III in which there was normal oestrous cycle, with copious non-purulent mucous discharge, there was only one case.

In general *C. pyogenes* affected cases had a higher antitoxin titre than normal cows but the levels were much lower than in *C. pyogenes* mastitis cases.—W. J. Brinley Morgan.

Castelli, F. (1949). La prova di Galli-Mainini sul maschio di Rana esculenta nella diagnosi di gravidanza della cavalla. **[Galli-Mainini pregnancy test in mares.]**—*Nuova Vet.* **25**, 6-13. **2656**

G. used male *Rana esculenta* instead of *Bufo arenarum* for the Galli-Mainini test, the blood serum being injected into both dorsal lymph-sacs of the frogs and the urine being examined for the presence of spermatozoa three hours later and subsequently every three hours.

The test seems to give satisfactory results, but further work is indicated.—M. Bertani.

Pond, M. H. (1951). **A microchromatographic method for the separation of certain fractions of 17-ketosteroids in human urine.**—*Lancet.* **261**, 906-909. [Author's summary copied *verbatim.*] **2657**

A microchromatographic method for separating the crude neutral extracts of 17-ketosteroids from human urine is described, using an adsorption alumina column and eluates of benzene containing graded quantities of ethyl alcohol. Eight fractions have been separated by this method, of which fractions I, III, and IV, have been identified as mainly chlorodehydro-iso-androsterone, dehydro-iso-androsterone, and androsterone respectively. Various methods of hydrolysis and extraction of the urine before using this method are discussed.

Schreiber, G. (1951). Organisation und Stand der Sterilitätsbekämpfung beim Rinde in Nordwürttemberg. **[Campaign against cattle sterility in North Württemberg.]**—*Mh. prakt. Tierheilk.* **3**, 341-359. **2658**

A description of the administrative and educational plan in North Württemberg to control the increasing sterility among cattle. Farmers are asked to have all their breeding cattle classified according to suitability, to keep exact records of all matings, to avoid over-use of bulls and the mating of too young bulls or heifers, and to prevent infection during coitus.
—W. T. Thompson.

Hanson, L. E. (1951). **The fertility of boars reared in a restricted environment.**—*Amer. J. vet. Res.* **12**, 118-122. **2659**

The fertility of 13 boars was not affected following housing indoors in confined quarters on a low diet.—E. J. H. Ford.

Schnelle, W. (1951). Über angeborene Blindheit bei Warmblutfohlen. **[Congenital blindness in foals.]**—*Dtsch. tierärztl. Wschr.* **58**, 325-326. **2660**

Case reports of four closely related thoroughbred foals. Clinical examination suggested the retina as the site of the lesion. Pedigrees were given.—C. W. Ottaway.

Butz, H. & Schnelle, W. (1951). Angeborene Lähmung der Hinterextremitäten beim Ferkel. **[Congenital lameness of the hind legs in piglets.]**—*Dtsch. tierärztl. Wschr.* **58**, 206-207. **2661**

A brief account of three types of congenital limb abnormality with reference to their possible association with vitamin deficiency.
—C. W. Ottaway.

Magee, W. T. (1951). **Inheritance of scrotal hernia in swine.**—*J. Anim. Sci.* **10**, 516-522. **2662**

This statistical investigation revealed a 15% maternal effect and selection amongst sows is suggested as a method of eradication.
—E. J. H. Ford.

Roberts, L. D. (1948). **Microphthalmia in swine.**—*J. Hered.* **39**, pp. 146-148. **2663**

A number of related Yorkshire pigs on a vitamin A adequate diet had various degrees of microphthalmia, which R. considers to be the effect of a dominant gene with low penetrance. This low penetrance may depend upon (a) environmental factors, (b) genetic factors, (c) a combination of both. [The histology of two similar cases was described by Maneely (1951).]—J. T. Done.

See also absts. **2681** (report, Australia); **2685** (report, Jamaica); **2686-2687** (reports, Mauritius).

ZOOTECHNY

WEGNER, A. M. R. (1950). **The cause of the enormous proportions and the extraordinary shape of some buffalo horns from the island of Sumba.** — *Hemera Zoa.* 57, 708-710. [In English. French and German summaries.] 2664

Although strong growth of horns is expected in the castrate animal, inquiry has revealed that the desired horizontal growth in this class of buffalo is effected by skilful notching of the dorsal side of each horn thus influencing horn-growth relationships. The operation is performed at the time of castration when the animal is two years old.—C. W. OTTAWAY.

LIPSON, M. (1951). **The problem of brands in wool.**—*Text. J. Aust.* 46, 295-298. 2665

The difficulties and economic losses resulting from brand marks in wool and previous research on scourable branding fluids are discussed. Research on the problem in Australia began in 1943 and a formula was released by the Commonwealth Scientific and Industrial Research Organization in 1950 for use by manufacturers. This formula and the method of preparation are given, together with comments on field application and results.—D. A. GILL.

MORNET, P. (1951). Amélioration de l'élevage. Rôle des établissements d'élevage. Extension de l'élevage en zone sud. **[Development of animal husbandry in French West Africa.]** —*Bull. Serv. Élev. Industr. anim. A.O.F.* 4, 109-142. Discussion pp. 143-149. 2666

The main animals dealt with are cattle, sheep, goats, pigs and poultry. The vexed question as to whether it is better to try to improve the indigenous stock or to import European breeds for crossing with them was discussed. The plans adopted in the different territories under French control were explained. —D. S. RABAGLIATI.

BONSMA, J. C. & NESER, F. W. C. (1951). **Practical application of growth studies on cattle.**—*Fmg. S. Afr.* 26, 365-374. 2667

Chest girth measurement has been proved to be correlated to live weight subject to variations. This measurement is more closely related to the carcass weight because these variable factors are then eliminated.—R. A. HUCK.

TECHNIQUE AND APPARATUS

NEWTON, G. W., SHARP, D. G., ECKERT, E. A., BEARD, D. & BEARD, J. W. (1952). **An automatic micro slide projector and procedures for staining and cleaning large numbers of slides.**—*Blood.* 7, 255-260. [Authors' summary copied *verbatim.*] 2668

There is described an automatic micro slide projector with which blood smears can be examined at a magnification of 430 × at a rate more than 3 times greater than that possible with a microscope. A procedure is described by means of which 320 blood smears can be stained in 6 minutes. There is described, also, a convenient method for cleaning and handling large numbers of slides.

SPURR, F. A. (1950). **Separatory device for use in testing dipping baths containing organic chlorides.**—*Vet. Med.* 45, 483-484. 2669

Organic chlorides (D.D.T. or B.H.C.) in dips or sprays are determined by placing a sample in a wide-mouthed bottle with a rubber stopper carrying two copper tubes for manipulation in extraction with a solvent. The solution is removed, and its organic chloride content is determined hydrometrically.—S. E. FOX.

SMITH, I. L., YEAGER, E., KAUFMAN, N., HOVORKA, F. & KINNEY, T. D. (1951). **Application of emission spectroscopy to medical problems. I. Spectographic techniques.**—*Arch. Path.* 52, 321-331. 2670

SMITH, I. L., KAUFMAN, N., YEAGER, E., HOVORKA, F. & KINNEY, T. D. (1951). **Application of emission spectroscopy to medical problems. II. A survey of typical applications.**—*Ibid.* 332-349. 2671

I. A brief account, suited to the understanding of the non-expert reader, was given of the techniques of emission spectroscopy, including excitation of the sample by flame, electric arc or high-voltage spark, the dispersion of the resulting spectrum into characteristic wavelengths by the spectrograph, the photographic recording of the spectrum, and its qualitative and quantitative interpretation.

II. Literature on emission spectroscopy was reviewed with reference to the determination of the mineral elements present in normal human organs and body fluids, and the study of the assimilation, storage and elimination by the human body of metallic compounds (of bismuth, gold, silver) used as therapeutic agents, and of qualitative and quantitative variations of metallic elements in pathological conditions, (*e.g.* lead poisoning). There is an extensive bibliography.—E. COTCHIN.

WEISS, E. & SEGELER, J. C. (1952). **A cloud chamber for the uniform air-borne inoculation of mice.**—*J. infect. Dis.* **90,** 13-20. [Authors' summary copied *verbatim.*] **2672**

A cloud chamber of the dynamic flow type for the simultaneous air-borne inoculation of as many as 108 mice has been constructed. The inoculation is effected by a modified De Vilbiss 40 atomizer operated at 10 lb. air pressure. The aerosol is rapidly mixed with incoming air, the aerosol-air mixture diffuses above the cages, it is drawn through them, and eventually flows into the exhaust system. The exhaust is operated by a steam jet evactor which serves the dual goal of drawing air into and through the cloud chamber for the dual purpose of mixing the aerosol and pulling the aerosol-air mixture into the decontamination chamber, where it is maintained for at least 30 seconds at 99° C.

Extensive tests revealed that under ordinary operating conditions the inoculum is strictly maintained in the cloud chamber and its exhaust system. Furthermore, mice are uniformly infected throughout the cloud chamber. The rate of exchange of air through the cloud chamber (which may be varied from one to two volumes) and relative humidity play important roles in determining the effectiveness of inoculation with the agent of murine pneumonitis. It is believed that the cloud chamber thus developed is a valuable tool for quantitative studies of air-borne infections of mice.

MACARTHUR, F. X. (1950). **Simplified heart puncture in poultry diagnosis.**—*J. Amer. vet. med. Ass.* **116,** 38-39. **2673**

A note on a technique for heart puncture in fowls.—E. EDEN.

See also absts. **2360** (differentiation of types of tubercle bacilli); **2363** (ear-chamber technique for observation of the effect of cortisone on TB. in rabbits); **2528-2529** (effect of cortisone on serum sickness in rabbits observed by ear-chamber technique); **2649** (milk as a serum diluent); **2651** (transplantation of mouse eggs); **2656** (pregnancy diagnosis).

MISCELLANEOUS

TOBIAS, C. A. (1951). **Mechanisms of biological effects of penetrating radiation.**—*Fed. Proc.* **10,** 595-601. **2674**

Direct action of radiations, *e.g.* neutrons from the chain reacting pile, X-rays, electrons, deuterons and alpha particles from the cyclotron, is a splitting of biological molecules by ions; in indirect action the primary ionization occurs at some distance from the molecules affected, the short-lived ions giving rise to radicals and intermediate chemical compounds in liquid medium. As a result enzyme systems may be inactivated, this being an example of one indirect effect. The mechanism of effects of radiations at the cellular level was discussed. The lethal effects in unicellular organisms may occur in the irradiated cells themselves. The relationship of dose to inhibition of cell division in haploid cells compared with the results of data obtained after irradiation of vegetative diploid colonies was discussed. Radiation effects on mammals were considered, for example remote parts of the body shielded from radiation may be affected by toxic substances carried in the blood, when other parts of the body are irradiated. Selective irradiation of the liver with a radio-active colloid materially affects nucleic acid synthesis in tumours.—F. R. HARRIS.

ANON. (1949). Primeiro Congresso Veterinário de Zootecnia Madrid, 1947. Conclusiones del Congresso. **[Conclusions of the first Veterinary and Zootechnical Congress, Madrid, 1947.]**—*Rev. Med. vet. Lisboa.* **44,** 77-88. **2675**

The report is divided into chapters dealing with animal products for human consumption and for industry, planning of animal husbandry to meet the various needs of the country, livestock fodder and the study of genetics and allied subjects.—F. A. ESTEVES.

ANON. (1952). **The Jackson Lab.**—*Lancet.* **262,** 252. **2676**

A brief description is given of the Roscoe B. Jackson Memorial Laboratory, Bar Harbor, Maine, founded in 1929 'for the study of cancer, genetics, and behaviour'. Great emphasis is laid on the maintenance of inbred stocks of animals, particularly mice, rabbits, and g. pigs.—W. R. BETT.

SCHAMBYE, P. (1951). **A new technique for exteriorizing the carotid artery.**—*Nord. Vet.-Med.* **3,** 1015-1018. [In English. German and Danish summaries. Author's summary copied *verbatim.*] **2677**

A technique for exteriorizing the carotid artery in ruminants [for convenience in obtaining blood samples—Ed. *V.B.*] is described. It consists of preparing a loop of the artery resting on the surface of either the sterno-mandibularis in sheep or the omohyoideus in calves, under the support of a semi-circular plate of "Perspex".

JASPER, D. E. & CUPPS, P. T. (1950). **Cecostomy in the horse. A practical experimental procedure.**—*J. Amer. vet. med. Ass.* **117,** 456-458. [Authors' summary copied *verbatim.*] **2678**

A two-stage operation for cecostomy in the horse [to provide a fistula for digestive studies—Ed. *V.B.*] is described, the first stage involving exteriorization of the cecum under general anesthesia, the second stage or completion of the fistula to the outside being done without anesthesia or special restraint.

REPORTS

GREAT BRITAIN. (1949). **Colonial Research 1948-49. [Reports of the Colonial Research Committee, Colonial Products Research Council, Colonial Social Science Research Council, Colonial Medical Research Committee, Committee for Colonial Agricultural, Animal Health and Forestry Research, Colonial Insecticides Committee, Colonial Economic Research Committee.** [REES-WILLIAMS, D. R.] pp. 134. London: H.M. Stat. Off. 2s. 6d. [8vo.] **2679**

Following the African and International RINDERPEST Conferences, the latter organised by F.A.O., which were held in Nairobi during October, 1948, the Committee for Colonial Agricultural, Animal Health and Forestry Research set up an *ad hoc* Veterinary Sub-Committee to study the problems arising from importation of immunized animals or their carcasses into the U.K. The Sub-Committee recommend that efforts should be concentrated on eradication of this disease from wide areas with large cattle populations.

Research into *Brucella melitensis* in the U.K. has been hampered by delay in building a special laboratory. Some preliminary experiments have been carried out with *Br. abortus* and a programme of work prepared by the officer selected to conduct this investigation.

The East African Agriculture and Forestry Research Organization and the joint Animal Husbandry Section, to be run in collaboration with the East African Veterinary Research Organization, are being established at Muguga, 17 miles from Nairobi and 10 miles from Kabete. The Infectious Diseases Research Section of the East African Veterinary Research Organization will be established at Kabete. Funds amounting to £325,000 have been released for the first phase of development, occupying five years.

Research into TB. in cattle in Tanganyika is being investigated by an officer with a mobile laboratory.

At the first meeting of the East African Advisory Council of Agriculture, Animal Industry and Forestry, held at Kabete in January, 1949, emphasis was laid on the need to establish or improve facilities at research stations in the main ecological zones of East Africa.

A recommendation by the Committee that a similar research organization to that in East Africa should be set up in West Africa has been approved by the West African Council. Headquarters of the agriculture and forestry organization will be at Ibadan, those of the veterinary organization at Vom.—T. LEACH.

CANADA. (1951). **Report of the Veterinary Director General for the year ended March 31, 1951.** [CHILDS, T.] pp. 67. Ottawa: Edmond Cloutier, Printer to the King's Most Excellent Majesty. **2680**

Eradication of TB. in cattle on an area basis is proceeding rapidly, especially in the prairie provinces. 4,428 herds have been included in a voluntary scheme for the eradication of BRUCELLOSIS.

Vaccination of all poultry in areas where NEWCASTLE DISEASE has been prevalent is expected to limit its incidence in future years. An attempt is being made to limit RABIES to the North West Territories by prohibiting the export of dogs from this area except under licence, and by large-scale vaccination of dogs within the Territories.

DOURINE, SHEEP SCAB, SCRAPIE, and SWINE FEVER appear to have been eradicated from Canada. There is a strict control of the importation of semen for artificial insemination; the animal from which semen is to be obtained must have been certified free from infectious or contagious disease before application for a permit can be made. Twenty-five such permits were issued during 1951.

—G. B. S. HEATH.

AUSTRALIA: QUEENSLAND. (1951). **Annual report of the Department of Agriculture and Stock for the year 1950-51.** [COLLINS, H. H.] pp. 94. Brisbane: A. H. Tucker, Govt. printer. [Rept. of Division of Animal Industry, pp. 16-22; Rept. of Division of Animal Industry, Veterinary Services Branch, pp. 52-82.] **2681**

Outbreaks of ANAPLASMOSIS ran the usual mild course seen in Queensland. The wet season favoured extension of the regions affected by cattle tick, and buffalo fly (shown in maps). Field trials showed that spraying with chlordane (0·25%), toxaphene (0·5%) or dieldrin (0·5%) provided satisfactory control of ticks in dairy herds. Spraying at 28-day intervals with dieldrin was followed by marked reduction in the tick population. A form of biological assay was introduced to test the insecticidal value of dipping fluid after long periods in the dipping bath. A heavily infested animal is sprayed and repeatedly examined to determine the effects on ticks in different stages of the life-cycle. It was found that a vat charged with 0·5% toxaphene was highly efficient 16 months later after 2,500 cattle had been dipped. In vats charged with benzene hexachloride there was a very slight decrease in efficiency after 2-3 years and after several thousand cattle had been dipped. Application of a mixture of D.D.T. and benzene hexachloride in a fog showed promise.

Clinical symptoms of HELMINTHIASIS in cattle commonly appeared some time after the time of maximum worm burden. Calves exposed to moderate larval intake develop resistance and when exposed later to heavily contaminated pastures may fail to develop clinical signs. Resistance to *Haemonchus contortus* is not as strong as against other species. Outbreaks in older calves are usually due to *H. contortus*.

LEPTOSPIROSIS (incidence shown in a map) continued to cause losses in cattle. Diagnostic tests were improved. Swine are common carriers. Calves continue to excrete leptospira in the urine for 2–3 months. Cows excrete the organisms infrequently and irregularly. Penicillin is moderately successful, but treated animals continue to excrete leptospira. Streptomycin is more effective and treated calves do not remain carriers. Agglutination tests proved the organism to be *L. pomona*.

COPPER DEFICIENCY in cattle in coastal regions was diagnosed for the first time in Queensland. Cattle of all ages were affected and symptoms included unthriftiness, poor growth and poor milk production. The occurrence of diarrhoea, anaemia and soft bones was variable.

TRICHOMONIASIS was diagnosed for the first time, in one herd only. Outbreaks of BLACKLEG were widespread and severe and there was a general failure of preventive vaccination. There were no indications that the disease was caused by organisms other than *Cl. chauvoei*.

Other diseases of cattle noted are SOLEY'S DISEASE (feeding trials with bracken), TB., BRUCELLOSIS, STERILITY, FOOT ROT, EPHEMERAL FEVER, and BOVINE CONTAGIOUS PLEURO-PNEUMONIA. PLANT POISONING was associated with ingestion of *Xanthium pungens, Trema aspera, Wedelia asperrima, Lantana camara, Pteridium aquilinum, Terminalia oblongata, Nicotiana* spp., *Sarcostemma australe, Cestrum parqui, Asclepias* spp. and paspalum ergot (*Claviceps paspali*).

Cattle husbandry activities included urea feeding, calf-feeding demonstrations, MINERAL DEFICIENCY, artificial insemination, crop feeding of beef cattle.

Feeding trials with a suspected plant, Croften weed (*Eupatorium adenophorum*), did not suggest it as a case of TULLEBUDGERA HORSE DISEASE. Oesophageal and stomach ulceration in horses was caused by ingestion of *Crotalaria aridicola*, an indigenous plant. Feeding tests confirmed that *Indigofera enneaphylla* is the cause of BIRDSVILLE DISEASE. Other plants toxic for horses were *Erythrophloem chlorostachys, Cryptostegia grandiflora* and *Duboisia myoporoides*.

In studies on low fertility in sheep it was found that although rams given thiouracil for 100 days showed thyroid depression their ability to convert carotene to vitamin A was not impaired. Studies continued on INFECTIOUS EPIDIDYMITIS, a serious cause of INFERTILITY in rams. *Erysipelothrix* (*Listeria*) *monocytogenes* was isolated from foetuses in an outbreak of ABORTION in ewes.

In transmission trials with CONTAGIOUS PUSTULAR DERMATITIS to man most volunteers resisted heavy inoculation of the skin (irrespective of their previous experience with sheep) but six infections were established among 18 people. Outbreaks occurred in goats.

The occurrence of URINARY CALCULI in wethers was commonly associated with ingestion of plants of high oxalate and high calcium and magnesium content. Experimentally, wethers were fed potassium oxalate (1 g. per 6 lb. body weight per day) for six months and remained healthy, and there were no changes in alkalinity or carbonate content of urine.

MELIOIDOSIS was seen in the Oonoonba Animal Health Station flock. In affected sheep there were lameness and coughing and one had brain lesions. Cases were seen in goats. COBALT DEFICIENCY was seen for the first time in Queensland in sheep in the central western region. There are notes on aerial transport of fodder to

sheep in flooded regions and on low reproductive rates in flocks. FLUOROSIS was studied further.

Diseases of pigs noted are TB., SWINE ERYSIPELAS and STREPTOCOCCAL ARTHRITIS, GLASSER'S DISEASE and PNEUMONIC AND INTESTINAL SALMONELLOSIS. Thirty pigs died in a herd grazed on a growing wheat crop; NITRITE POISONING was suspected. A feeding test with wheat containing seeds of *Polygonum convolvulus* did not reveal ill effects. Ingestion of pods of *Phaseolus lathyroides* was thought to be responsible for sows becoming poor and losing their litters.

PULLORUM DISEASE was recorded in turkeys for the first time in Australia. Fowls died after eating leaves of *Cestrum parqui*. Other diseases of poultry noted are COCCIDIOSIS, LEUCOSIS, and VITAMIN A DEFICIENCY. AVIAN TB. was not detected in a survey. Stickfast flea is being controlled with D.D.T. Feeding trials dealt with high-level maize rations and grain treated with benzene hexachloride for control of weevil infestation. An objectionable flavour was detected in flesh and eggs of birds fed mashes containing commercial benzene hexachloride.

—H. McL. GORDON.

AUSTRALIA. SOUTH AUSTRALIA. (1950). **The Institute of Medical and Veterinary Science. Twelfth Annual Report of the Council, July, 1949-June 1950.** pp. 45. Adelaide: The Institute. **2682**

In the Division of Veterinary Pathology the main matters of interest included Brucella agglutinations, MASTITIS, complement-fixation test for BOVINE CONTAGIOUS PLEURO-PNEUMONIA, TETANUS in lambs, SWINE DYSENTERY, suspected LARYNGO-TRACHEITIS in poultry, suspected LEPTOSPIROSIS in dogs, AVIAN ENCEPHALOMALACIA, suspected AVIAN ENCEPHALOMYELITIS, CANINE VIRUS HEPATITIS, PROTEUS spp. and acute GASTRO-ENTERITIS in dogs, *Psoroptes hippotis* causing OTOACARIASIS in foals, SWINE ERYSIPELAS and ARTHRITIS IN LAMBS, isolation of *Erysipelothrix* from contaminated material, susceptibility of mice to *Erysipelothrix*, nicotinic acid assay of pig tissues, LAMENESS OF CATTLE grazing on *Festuca arundinacea*, DYSPNOEA in Dorset Horn sheep, UNTHRIFTINESS in lambs.

Experiments on AVIAN COCCIDIOSIS (*E. tenella*) showed that treatment of outbreaks with sodium sulphamethazine (24 gr. per gal. of drinking water) for three days, or exposure to contaminated ground for a similar period whilst receiving the same treatment, did not prevent further outbreaks. Acute CAECAL COCCIDIOSIS with considerable mortality recurred one week after cessation of treatment and removal to "clean" ground. The "control" method of exposure to infection for six days followed by removal to "clean" ground with continuance of the drug (10 gr. per gal.) for a further two days gave good results.

Field trials on STAGGERS following grazing on rye grass (*Lolium perenne*) provided strong indications that topdressing with a complex mineral mixture (containing Co, Cu, Mn, Zn, B and Mo) or with zinc sulphate may prevent the disease.—H. McL. GORDON.

HONG KONG. (1951). **Report of the Government Veterinary Officer, 1950-51.** [RIX, J. C.] Hong Kong Ann. Rep. 1950-51. pp. 27-34. Hong Kong: Noronha & Co. Ltd., Govt. Printers. **2683**

The report of the Veterinary Officer, who works with the Animal Husbandry Officer and the Government Pathologist, deals chiefly with diseases in cattle, swine, dogs and poultry. Although most of the pigs are imported, pig products are an important export. Pigs to the number of 8,500 had to be condemned as unfit on arrival at the abattoirs or in transit, 354 because of SWINE FEVER, 369 because of TAENIA INFESTATION and 7,133 because of "exhaustion". SWINE FEVER and SWINE ERYSIPELAS are the main diseases among pigs.

—W. T. THOMPSON.

JAMAICA. (1950). **Annual report of the Department of Agriculture for the year ended 31st March 1949.** pp. 18. Kingston: Govt. Printer. 1s. 3d. [Includes report of the Veterinary & Livestock Division pp. 13-17.] **2684**

An Animal Quarantine Reporting Service, under the aegis of the Caribbean Commission, came into being in January, 1949.

Calfhood vaccination against BRUCELLOSIS, using Strain 19, has proved beneficial and a system of marking vaccinated calves has been initiated. Careless disinfection of milking machines was shown to be responsible for the spread of MASTITIS. Outbreaks of BLACKLEG were frequent, owing to the failure of farmers to have their stock inoculated as a routine preventive measure.

SWINE FEVER appeared in various areas. Despite a Government subsidy to reduce the price of vaccine, it required organized campaigns to encourage the farming public to have their pigs inoculated.

HELMINTH INFESTATIONS were prevalent and severe. It is impossible to maintain high grade goats in Jamaica unless they are regularly dosed with phenothiazine.

Babesia canis, Spirocerca lupi and *Trombicula irritans* were all identified in the island for the first time. Using a complement-fixation test, a survey of blood samples from cattle was started to study the phenomenon of carrier animals and the development of premunity. The most important animal health problems are nutritional. "MANCHESTER WASTING DISEASE" was being studied.

Two artificial insemination centres are now functioning.

Selection of Jersey cattle is being based on tolerance to local conditions. Experiments continue on the cross-breeding of Jersey and Holstein cattle with zebu, principally Sahiwal, stock.

Investigation into the use of dyes for identifying semen has shown that certain coal tar dyes can be employed without any deleterious effect.

—T. LEACH.

JAMAICA. (1951). **Annual report of the Department of Agriculture for the year ended 31st March 1950.** pp. 18. Kingston: Govt. Printer. 1s. [Includes report of the Veterinary & Livestock Division pp. 10-14.] **2685**

Reduction in the incidence of BRUCELLOSIS is attributed to the use of Strain 19 vaccine in recent years.

Two outbreaks of LARYNGOTRACHEITIS occurred; the disease had not previously been recorded in Jamaica. Infection was traced to day-old chicks imported from the U.S.A. Eradication was effected by adopting a slaughter policy. GRANULAR VAGINITIS IN CATTLE was also recognized in the territory for the first time.

Ground fumigation trials were conducted, in an attempt to control HELMINTH INFESTATION, but no conclusions had been reached by the end of the year.

Investigations were started to determine the cause of reduced efficiency of benzene hexachloride dips. Research on nutritional problems, particularly "MANCHESTER WASTING DISEASE" was continued. A blood chemistry survey of cattle established widespread HYPOPHOSPHATAEMIA, when compared with standards in temperate regions.—T. LEACH.

COLONY OF MAURITIUS. (1949). **Annual report of the Department of Agriculture, 1949.** [DARNÉ, A.] pp. 78. [Report of Veterinary Division pp. 32-36.] Port Louis: J. Eliel Felix, Govt. Printer. R.1. **2686**

The Veterinary Division has been concerned chiefly with the control of disease in cattle, sheep or goats, and in attempts to improve fertility in cattle, many heifers being found to have OVARIAN CYSTS and some bulls to be secreting sterile semen; in other cases the time of service was at fault. Some response has been obtained to a campaign for artificial insemination. The importation of animals for food or other uses has been supervised and dogs and horses have been quarantined.

— W. T. THOMPSON.

COLONY OF MAURITIUS. (1950). **Annual report of the Department of Agriculture, 1950.** [DARNÉ, A.] pp. 92. [Report of Senior Veterinary Officer pp. 55-57.] Port Louis: J. Eliel Felix. Govt. Printer. Rs. 1.25. **2687**

The Veterinary Division has found a high incidence of positive response to the tuberculin test among dairy cattle. Deficiency disease is also prevalent, and a number of sheep and goats have been treated for parasitic disease. Vaccination against FOWL POX was very successful. STERILITY in cattle was again found to be caused by cystic ovarian disease in heifers and azoospermia in bulls. Artificial insemination was carried out in 200 cows belonging to large and small farms. Lectures in veterinary science have been given to agricultural students.

—W. T. THOMPSON.

TANGANYIKA TERRITORY. (1950). **Annual report of the Department of Veterinary Science and Animal Husbandry for the year 1949.** pp. 23. Dar es Salaam: Govt. Printer. 2s. **2688**

The Territory suffered severely from drought in 1949. Grazing became denuded and stock were forced into the tsetse-bush.

ANTHRAX and BLACKLEG occurred sporadically in all areas. In those districts where the diseases are enzootic, stock owners are becoming increasingly conscious of the value of protective inoculations. An officer of the East African Veterinary Research Organization investigated TB. IN CATTLE in the Eastern and Southern Highlands Provinces, but his report had not yet been published.

Large numbers of cattle grazing in the tsetse-bush, on account of the drought, became infected with TRYPANOSOMIASIS. Treatment with dimidium bromide generally gave good results. Field experiments to compare the protection conferred on cattle exposed to tsetse infection by inoculation with antrycide and with dimidium bromide showed that antrycide was more effective and produced less systemic disturbance.

Widespread outbreaks of RINDERPEST occurred during the year. Enforcement of quarantine restrictions was hampered, and sometimes made impossible, by the severe drought conditions. Spread of the disease was also facilitated by contamination of attenuated goat virus

from Kabete with a wild strain of rinderpest virus. Vigorous control measures prevented the disease spreading south of the Central Railway and by the end of the year it had been eradicated from a large area north of this line. Experimental evidence was obtained that cattle reacting to attenuated goat virus might possibly be infective to some wild ruminants but further experiments are necessary before definite conclusions can be drawn. Attempts are being made to develop a serological test for RINDERPEST.

RABIES was restricted to one district, where quarantine restrictions remained in force and a shooting and poisoning campaign was prosecuted, destroying large numbers of stray dogs.

The report also contains a note on the work conducted at each of the Government stock farms and trade statistics, including figures for stock slaughtered in abattoirs during the year and hides and skins exported.—T. LEACH.

UGANDA PROTECTORATE. (1951). **Annual report of the veterinary department for the year ended 31st December, 1950.** [RANDALL, J. B.] pp. 31. Entebbe: Govt. Printer. 2s. 2689

Scattered outbreaks of RINDERPEST still occur, but it has been eliminated from some areas. EAST COAST FEVER causes many deaths among calves, but it is notable that where calf management is good the incidence of the disease is low; this may be because all deaths in calves are recorded as being due to this disease. F. & M. DISEASE and CONTAGIOUS BOVINE PLEURO-PNEUMONIA are endemic in the country. Very large numbers of cattle have been treated for TRYPANOSOMIASIS with antrycide. It is concluded that a mixture of antrycide methyl chloride and methyl sulphate cannot be recommended as a prophylactic.—G. B. S. HEATH.

EIRE. (1947). **Sixteenth Annual Report of the Minister of Agriculture 1946-47.** [DILLON, J. M.] pp. 171+[85]. Items of veterinary interest pp. 29-47; 78-86. Dublin: The Stationery Office. 3s. 6d. 2690

Routine laboratory diagnostic work at the Pathology Department of the Veterinary College included the examination of 1,329 specimens. These included 383 milk samples of which 253 were negative, 77 revealed streptococcal infection, 22 staphylococcal infection and 26 mixed streptococcal-staphylococcal infections, 15 *C. pyogenes* infection and four TB. Of agglutination tests on blood samples from 116 cattle for *Br. abortus* infection 28 were positive and of 25 from equine species six were positive. Of uterine swabs from 100 equine species 12 revealed STREPTOCOCCAL INFECTION and three mixed STREPTOCOCCAL-STAPHYLOCOCCAL INFECTION. One SALMONELLA INFECTION in a foal was recorded. Of 99 specimens from dogs and 127 dog carcasses and viscera examined ten cases of LEPTOSPIRAL JAUNDICE, two of TB., eight of STREPTOCOCCAL SEPTICAEMIA and one of *Haemophilus bronchisepticus* SEPTICAEMIA were diagnosed.

Of 81 pig carcasses and viscera examined SWINE INFLUENZA was diagnosed in 15, GASTRO-ENTERITIS in 39, TB. in one, and STREPTOCOCCAL SEPTICAEMIA, VARIOLA, SWINE ERYSIPELAS, and PIGLET ANAEMIA in one each.

Of 31 cat carcasses examined CHRONIC PASTEURELLOSIS was diagnosed in one and INFECTIOUS ENTERITIS in 15.

Other specimens were from 17 sheep and 179 fish and specimens from various animals from the Zoo.

Of 139,857 specimens examined by the Poultry Pathology Section 134,909 were agglutination tests for BACILLARY WHITE DIARRHOEA.

The main part of the work of the Meat Bacteriology Section was the examination of canned meat processed by Irish firms for export. The work also included the examination of water and raw materials used in the preparation of food, bacteriological surveys of canning factories and advising canners on methods for improving their products.

A total of 8,194 sick animals were treated at the Clinical Department. It is recorded that the Stader splint was successfully used for the treatment of a fractured tibia in a pony.

At the Veterinary Research Laboratory, of 713 specimens examined from suspected cases of TB. 81·76% were positive. Of 300 milk samples examined 4·66% were positive.

Of 3,186 agglutination tests for BOVINE CONTAGIOUS ABORTION, 44·16% were positive.

Doses of vaccine prepared and issued to veterinary surgeons totalled 121,260. These were 8,774 doses of CONTAGIOUS ABORTION vaccine, 69,280 doses of BLACKLEG vaccine, and 43,206 doses of BRAXY *vaccine*.

Of 9,385 milk samples examined from 1,808 quarters infected with MASTITIS, 801 contained streptococci, 949 contained straphylococci, 35 contained both streptococci and staphylococci, 20 contained *C. pyogenes* and three coliform bacteria. Successful results were obtained with penicillin therapy in 1947.—J. A. GRIFFITHS.

EIRE. (1948). **Seventeenth Annual Report of the Minister for Agriculture, 1947-48.** [DILLON, J. M.] pp. vi+172+[88]. Items of veterinary interest pp. 43-51, 81-87, 128-131 and appendices [7]-[9]. Dublin: The Stationery Office. 5s. 2691

Eire had no outbreaks of ANTHRAX, F. & M. DISEASE, SWINE FEVER, GLANDERS, or PARASITIC MANGE in cattle. There were 1,781 cases of TB. in cattle reported and 855 animals were slaughtered.

There were 86 outbreaks of SHEEP SCAB affecting 1,068 sheep.

WARBLE INFESTATION is being dealt with actively using derris preparations.

— J. A. GRIFFITHS.

U.S.A. FLORIDA. (1950). **University of Florida, Gainesville, Florida. Agricultural Experiment Stations. Annual report for the fiscal year ending June 30, 1950.** pp. 263. [Items of veterinary interest pp. 104-108.] **2692**

The newly-formed Department of Veterinary Science has worked on a number of "projects" (State and otherwise) in the study of animal diseases: infectious BOVINE MASTITIS; internal and external parasites in cattle; including the common liver fluke; the so-called "leeches" in horses, probably of fungous origin; ANAPLASMOSIS in cattle; factors influencing the development of PULLET DISEASE. Experiments were carried out in feeding cobalt (including the cobalt-containing vitamin B_{12}) to young chicks.

—W. T. THOMPSON.

U.S.A. MICHIGAN. (1951). **Twelfth annual report of the Regional Poultry Research Laboratory, East Lansing, Michigan, July 1st 1950-June 30th 1951.** [WINTON, B.] pp. 18. [Mimeographed.] **2693**

Despite rigid quarantine, a serious outbreak of INFECTIOUS BRONCHITIS occurred during 1950. This disease now appears to have been eradicated. The remainder of the report is devoted entirely to a study of LYMPHOMATOSIS and includes work done on egg and contact transmission of the disease, breeding for resistance and susceptibility, and histology. Cortisone had no effect on tumour growth and field observations that increased levels of vitamin B_{12} may bring about an increase in the incidence of LYMPHOMATOSIS were not confirmed. Inability to produce chickens which are free from LYMPHOMATOSIS is the greatest handicap to research on this problem.—G. B. S. HEATH.

U.S.A., NEW YORK. (1950). **Sixty-third Annual Report of the College of Agriculture at Cornell University and of the Cornell University Agricultural Experiment Station, 1950.** [ANON.] pp. 192. New York: New York State College of Agriculture. Items of veterinary interest pp. 100-112. **2694**

Lambs and calves were fed a purified diet consisting of 4% urea, 43% maize starch, 25% maize sugar, cellophane 10%, wheat straw 10%, lard 3%, and mineral mixture 5%. Vitamins A and D were fed separately. When the mineral mixture contained sulphates the lambs grew at two-thirds the normal rate but without sulphates they did not gain any weight, appetite failed, they began eating wool from their bodies, became emaciated and died within three months unless sulphates were again given. Holstein calves failed to grow on the same diet that supported growth in lambs until 5% dried brewers' yeast or B vitamins were added when they gained 1·5 lb. a day.

Other lambs fed a similar diet in which casein replaced the urea nitrogen and part of the maize starch, failed to gain weight until brewers' grains or B vitamins were added to the diet.

Lambs require 0·1 mg. cobalt per day whereas the toxic level is 160 mg. per day. Cobalt affects the varieties, numbers and functions of the bacteria in the ruminant stomach. It has been found that cobalt-deficient lambs respond remarkably to the liver extract injections used normally in the treatment of pernicious anaemia in man. This is not the result of the slight trace of cobalt in the liver extract nor of the vitamin B_{12} content (the cobalt containing vitamin), but to some unknown compound in the liver extract on which further research is necessary.

Cows provided with hard salt blocks consume as much as those given salt in granular form. Salt tolerance was found to be 0·5 lb. per day. If fed in excess of this amount appetite was affected. Even this high intake did not increase the normal content of salt in the blood and milk but in the urine it rose to high figures.

Studies with sheep and cattle receiving various types of hay silage and pasture grasses, revealed that an unknown chromogen occurring in plants and absorbing light at 406μ was found to be completely recoverable from the faeces. On this finding a method was devised for measuring digestibility.—J. A. GRIFFITHS.

See also absts. **2436-2437** (Belgian Congo); **2644** (veterinary college, Copenhagen).

BOOK REVIEWS

REICHENOW, E. [Revised by.] (1949). Doflein. Lehrbuch der Protozoenkunde. Erster Teil. Allgemeine Naturgeschichte der Protozoen. **[Doflein's textbook of protozoology. Part I. General life history of the protozoa.]** pp. 408. Jena: Gustav Fischer. 6th Edit. DM. 21.-. **2695**

Authoritative reference books dealing com-

pletely with the Protozoa are unfortunately very few. This is especially remarkable in view of the many amazing variations and adaptations in unicellular organization. It is this particular aspect which is dealt with in this sixth, completely revised edition of the first part of this well-known reference book, last published in 1929. The revision has followed the original plan and the considerable amount of new material fairly covers the research of the last twenty years, although the specialist may find slight omissions.

The sectional headings cover Morphology, Physiology, Reproduction, Ecology and Technique, the biology of the whole sub-kingdom being dealt with in this way. The scope of the book is extremely wide and should provide a useful aid to the study of particular aspects of pathogenic Protozoa.

The usefulness of this volume especially as a reference book would have been greatly enhanced by the inclusion of a subject index. Nevertheless it will retain its place as a standard reference work and as such surely deserved a much better reproduction than its paper binding and poor quality paper afford.

—L. P. JOYNER.

HUNGERFORD, T. G. [B.V.Sc., H.D.A., Lecturer in Veterinary Medicine (Poultry Diseases). Faculty of Veterinary Science, University of Sydney.] (1951). **Diseases of poultry.** pp. 427. Sydney: London: Angus and Robertson. 2nd Edit. revised and enlarged. 63s. 2696

This book was written originally for the poultry farmer but it became the standard reference book for the course in poultry diseases at the universities of Queensland and Sydney and the second edition has been enlarged to include more technical detail for the benefit of the veterinarian and stock inspector. In the preface to this book the author makes it clear that he is only concerned with diseases of economic importance in the States of New South Wales and Victoria and that his book should be used by the veterinarian in conjunction with the textbooks on poultry pathology published in other countries. Even so, it seems wrong that diseases of world wide importance like Newcastle disease and fowl plague, which might occur in Australia at any time, should receive the briefest possible mention in a chapter dealing with other miscellaneous conditions such as bumble foot and sour crop.

The book is divided into fifteen chapters, the diseases being grouped according to their symptoms and not on the basis of their causation. The author claims that this arrangement is more convenient to the farmer who, after noting the symptoms shown by his ailing birds, will be able to find in the same chapter an account of the diseases associated with those particular symptoms, together with their differential diagnosis. An example of this unorthodox arrangement is a list of diseases described under the heading "Roup Diseases"; the following conditions are dealt with in this chapter:—vitamin A deficiency, fowl pox, infectious laryngo-tracheitis, infectious catarrh, coryza, cholera, eyeworm and gapeworm infection. Other diseases are described in chapters headed "Diseases of chickens and young stock", "Paralysis and leg weakness diseases", "Diseases in which diarrhoea is a common symptom", "Deficiency diseases", "Various diseases". There are also chapters concerned with internal and external parasites, disinfection and fumigation, feeding, management, and hatchery problems and lastly, two short chapters on the diseases of turkeys and ducks. There is a short glossary of technical and anatomical terms and also an index, but although the author refers occasionally in the text to the work of other people, he does not give the references.

The book is bound attractively, well printed and illustrated with photographs and diagrams.—J. D. BLAXLAND.

HASZELDINE, R. N. [Assistant in Research in Organic Chemistry, University of Cambridge.] & SHARPE, A. G. [Fellow of Jesus College, Cambridge, and University Demonstrator in Chemistry. (1951). **Fluorine and its compounds.** pp. 153. London: Methuen & Co. Ltd.; New York: John Wiley & Sons, Inc. 8s. 6d. 2697

This monograph gives a brief but authoritative account, intended to serve as a review, of the modern inorganic and organic chemistry of fluorine, laying special emphasis on the relation between structure and properties of inorganic fluorides, and of the influence of fluorine on the properties and reactivity of organic compounds, comprehensive lists of references to the literature being given up to 1950. Written for teachers, students and research workers, it is illustrated by organic formulae and many tables and there is a good index. It should be very useful to any reader seeking information on the chemistry of fluorine.

—E.M.J.

BOOKS RECEIVED

[Notice of recently received books in this list does not preclude review.]

BUROS, O. K. (Edited by). (1951). **Statistical methodology reviews 1941-1950.** pp. 340. New York: John Wiley & Sons, Inc.; London: Chapman & Hall, Ltd. 56s.

CATCHESIDE, D. G. (1951). **The genetics of micro-organisms.** pp. vii + 223. London: Sir Isaac Pitman & Sons, Ltd. 21s.

COSSLETT, V. E. (1951). **Practical electron microscopy.** pp. xiii + 299. London: Butterworths Scientific Publications Ltd. 35s.

GERRARD, F. (1951). **Meat technology. A practical textbook for student and butcher.** pp. 309. London: Leonard Hill, Ltd. 15s.

HARRIS, R. J. C. (Edited by). (1951). **Freezing and drying. Report of a symposium held in June, 1951.** pp. 205. London: The Institute of Biology. 15s.

KOCH, W. & DEIMEL, B. (1952). Über Krankheiten der Menschenaffen. **[Diseases of apes.]** pp. 68. Jena: Gustav Fischer. DM. 6.

MASON, I. L. (1951). **A world dictionary of breeds, types and varieties of livestock.** pp. 272. Farnham Royal, Nr. Slough: Commonwealth Agricultural Bureaux. Technical Communication No. 8 of the Commonwealth Bureau of Animal Breeding and Genetics. 30s.

PINCUS, G. (Edited by). (1952). **Recent progression hormone research. The Proceedings of the Laurentian Hormone Conference. Vol. VII.** pp. 527. New York: Academic Press Inc. $ 9.50.

SELYE, H. (1952). **The story of the adaptation syndrome. (Told in the form of informal, illustrated lectures.)** pp. 225. Montreal: Acta, Inc. $4.50.

SLESSER, C. (Edited by). (1951). **Preparation, properties and technology of fluorine and organic fluoro compounds.** pp. xxiii + 868. New York: Toronto: London: McGraw-Hill Book Company, Inc. $ 10.50.

WIGGERS, C. J. (1950). **Physiology of shock.** pp. xix + 459. New York: The Commonwealth Fund. Harvard University Press, Cambridge, Mass.; London: Oxford University Press. 32s. 6d.

WIRTH, D. (1950). Grundlagen einer klinischen Hämatologie der Haustiere. **[Clinical haematology of domestic animals.]** pp. viii + 372. Vienna & Innsbruck: Urban & Schwarzenberg. 2nd Edit. DM. 25.

ANON. (1952). **The British Pharmaceutical Codex 1949. Supplement 1952.** pp. 148. London: Pharmaceutical Press. 25s.

ANON. (1952). **British Standards Institution Yearbook.** pp. 460. London: British Standards Institution. 7s. 6d.

Printed in Great Britain by CHARLES BURRELL & SON, Chertsey

INDEX VETERINARIUS

The publication of *Index Veterinarius* commenced with the indexing of the literature of 1933. It is a complete index of current publications relating to veterinary research, public health, administration, education and other aspects of veterinary science.

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